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# THE BOSTON Medical and Surgical JOURNAL

OFFICIAL ORGAN OF THE MASSACHUSETTS MEDICAL SOCIETY AND OF THE NEW ENGLAND SURGICAL SOCIETY

Vol. CLXXX, No. 3
$5 per Annum, 15c per copy

THURSDAY, JANUARY 16, 1919

Published weekly in Boston, at 126 Massachusetts Avenue


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## Original Articles.

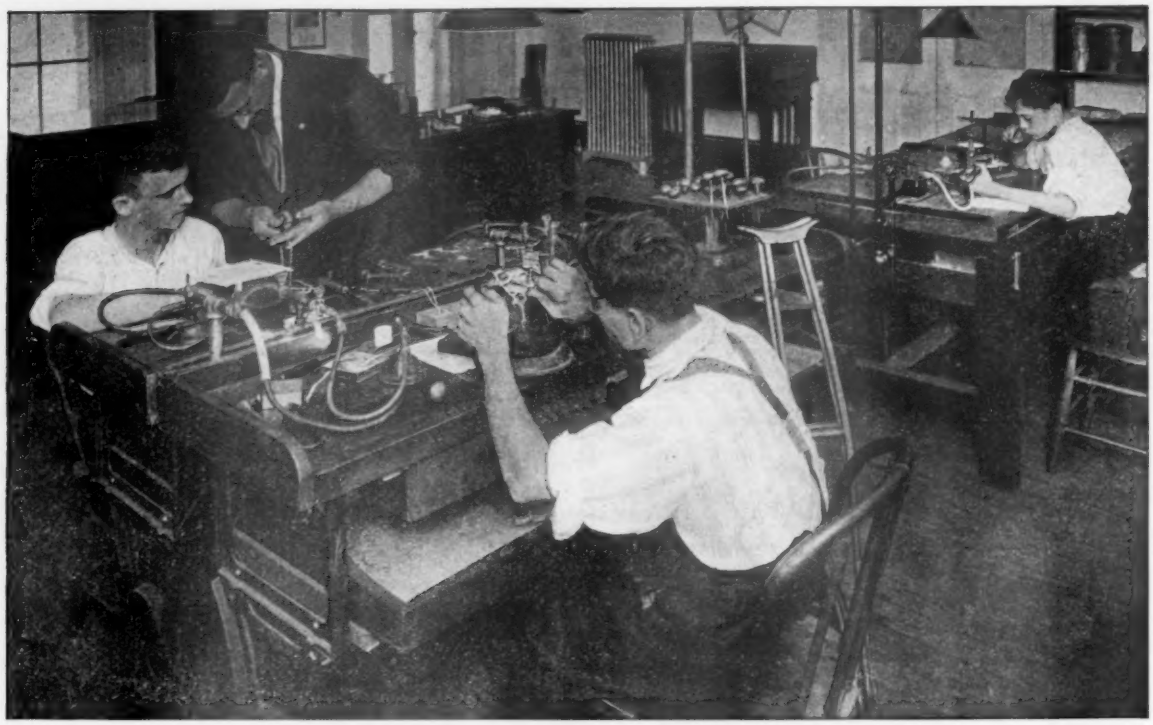
### THE WORK OF AN AMERICAN SCHOOL FOR THE REHABILITATION OF THE DISABLED.


BY DOUGLAS C. MCMURTRIE, NEW YORK.

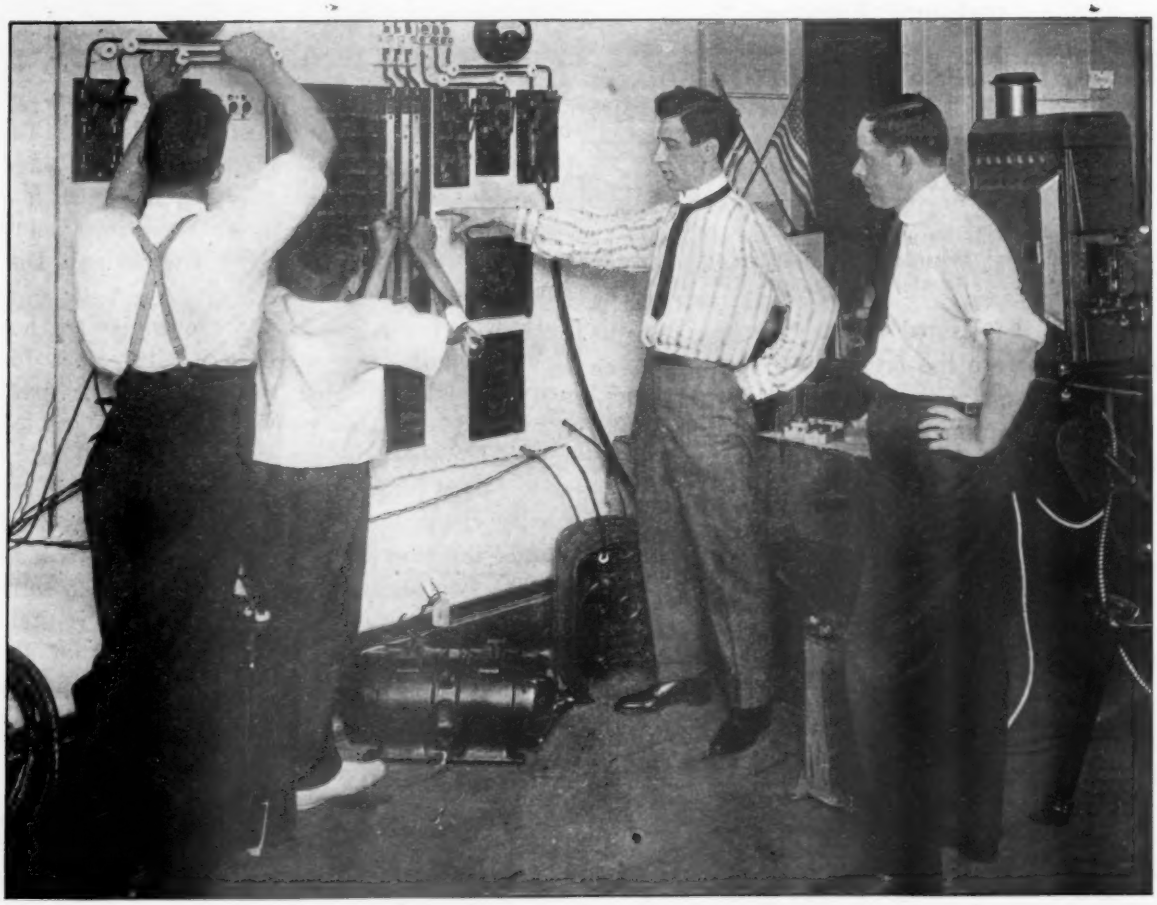
*Director, The Red Cross Institute for Crippled and Disabled Men; President, Federation of Associations for Cripples.*


BEFORE the United States had been at war a month, before the first 50,000 men had been sent overseas, a group of persons interested in industrial training for cripples saw the necessity of making provision for the economic reconstruction of American soldiers when they should return home wounded and maimed. The experience of France, Italy, and the other allied countries had shown that the way to help the crippled soldier to rebuild his life was to teach him a trade in which he could earn a decent livelihood despite his injuries. If we in America were to profit by European experience, it was clear that we should prepare at once to give our American *mutilés* the needed trade training. In the belief that the American Red Cross was the agency which could most successfully sponsor such a scheme, those interested in the project proposed to the Red Cross that it should organize a school where disabled soldiers could be taught to be self-supporting. At the same time, Mr. Jeremiah Milbank of New York City offered to supply the necessary funds and to give the use of a building for the school. The proposition was favorably acted upon by the Red Cross, the offer accepted, and in the autumn of 1917 there came into being the Red Cross Institute for Crippled and Disabled Men.

It will be noted that the organization has been officially designated an institute, not for crippled and disabled soldiers, but for crippled and disabled *men;* its benefits are extended to the cripples of peace as well as of war. Here in America the number of men annually crippled in industrial accidents is very large—the most conservative estimate puts it at 80,000—yet there has been no attempt to solve in a broad way the problem of their reëstablishment in industry. The organizers of the Red Cross Institute decided, therefore, that in order to make their work of the greatest value to the nation, they should undertake to reconstruct not only the disabled soldier but the disabled industrial worker as well. They also saw that the best way to build up an efficient organization for the reëducation of the future returned soldier was to start at once with civilian cripples. The disabled soldier is, of

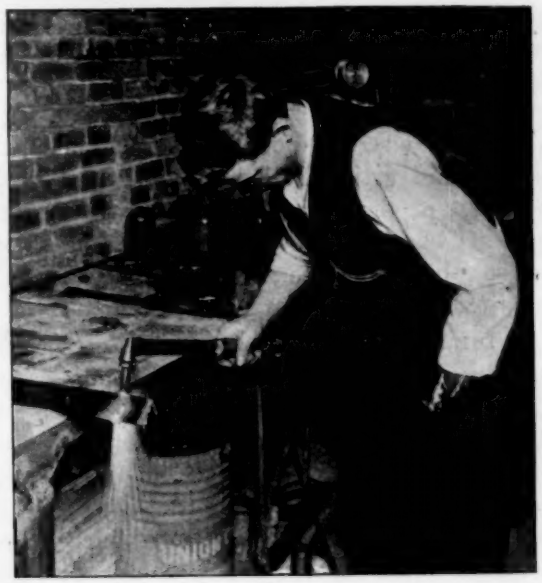


JEWELRY CLASS, RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN.



MOTION PICTURE OPERATORS IN THE MAKING. DISABLED MEN ARE PREPARED TO TAKE EXAMINATIONS FOR CITY LICENSES IN THE CLASS OF THE RED CROSS INSTITUTE FOR CRIPPLED AND DISABLED MEN, 311 FOURTH AVENUE, NEW YORK CITY.

One-armed Instructor and Pupil, Mechanical Draughting.



Oxy-acetylene Welding Room of the Red Cross Institute for Crippled and Disabled Men, 311 Fourth Avenue, New York City.

course, a very different type from the man who has been injured in an accident and a long time out of work. He is separated as by a chasm from the congenital cripple, but practice in training the one is bound to throw light on the reëducation of the other.

The Institute's part in the reëducation of American soldiers depends on the extent to which it is utilized by the Federal Board for Vocational Education, the government department charged by law with responsibility for the vocational rehabilitation of the disabled men of the American forces. Since the Federal Board has announced that it will, as far as possible, make use of existing facilities for training, the Institute is prepared to receive soldier pupils who can profit from its instruction. Through its experience with training civilian cripples the Institute believes that it is able to offer reëducational facilities of real value to the disabled soldiers now returning from abroad. Comparatively few of these have as yet been discharged from the Army and made eligible for reëducation; now that peace is here the total number will never be more than a small fraction of the number of the disabled in France and other allied countries. It may well be, therefore, that the greatest work of the Institute will consist not in helping our disabled warriors to rebuild their lives, but in salvaging the less renowned victims of the industrial struggle. Having undertaken this task, the Institute, unlike many of the European reëducational schools, will be a permanent institution.

Six trades are being taught at present, with the probability that others will be installed as the demand develops. The selection of these trades has been governed by the same general principles that have formed the basis for selection in Europe: the suitability of the trade for handicapped persons, the length of time required to learn it, the standard of wages, the demand for workers, and the attitude of the trade toward apprentices.

The first shop installed was for the manufacture of artificial limbs. This trade was known to be suitable for men with leg injuries, for numbers of them were already employed by the different limb manufacturers of the country. It was seen that there was no prejudice on the part of employers in the trade against disabled men; indeed, men who have had a leg amputated are considered an asset to the business, since they can be utilized in demonstrating as well as in producing. A man who has lost his leg seems, moreover, peculiarly suited to work on artificial limbs; he knows from his own experience more about the fine points which make for comfort and usefulness in a leg than a normal workman can ever learn from others. The demand for limbs, and, as a consequence, for skilled workmen, has, of course, been greatly increased by the war.

Another factor influencing the Institute to manufacture artificial limbs was the desire to

improve existing models and to standardize materials and design by scientific research and experimentation. To this end the Institute has entered into correspondence with the military hospitals and reëducational centers abroad that manufacture artificial limbs, and has secured specimens of the limbs now being used in Europe. It has fixed upon a model for a leg of the so-called American type, but it is still studying the problem of the working-arm.

A further consideration was the discovery that the first requirement of many applicants for aid was a limb. Until they were supplied with one, little hope of training or employment could be held out to them. By manufacturing the needed appliances in its own shop, the Institute is able to supply them at a much lower cost than would otherwise be possible. Just recently the Institute has made an agreement with the Bureau of War Risk Insurance whereby it will manufacture limbs in quantity to be furnished, through the Bureau, to American soldiers who have undergone an amputation.

Production in larger quantities than the trade has been accustomed to is possible in the Institute's artificial limb shop through the use of modern machine methods. The hand work in roughing out a limb has been greatly reduced by a lathe which turns out the wooden parts according to standard models. Another lathe, specially designed and built, automatically hollows out the stump socket in conformity to a plaster cast of the stump. The shop is also equipped with extensive bench facilities for hand work, with a gas forge and anvil, nickel-plating facilities, special sewing machines for leather work, lathes for wood and metal work, a drill press, grinding and polishing machines, a band saw, and a sanding machine. Plaster casts are made from stumps and finished limbs adjusted in a separate fitting room.

Most of the pupils who have been trained have been kept on as paid workmen.

Printing, the next trade to be installed, is known to employ at good wages a steadily increasing number of men. In fact, it stands sixth in importance among the industries of the country, and in the New York district ranks third. The shop is equipped as a complete printing office, but for the present it is specializing on teaching the operation of the monotype caster. This can be learned in a reasonably short time and is within the powers of a man with an injured leg, even with an amputated leg, if he can stand part of the time without discomfort. The demand for capable caster runners and machinists far exceeds the supply. A two-months' course of training has fitted the Institute's pupils to obtain positions as runners at $16 a week; some months' additional experience enables those who have ability to earn from $30 to $35 a week as machinists in charge of operation.

Although two good hands are, as a general rule, considered requisite for the work, there has been admitted to the class a former hand compositor who had suffered an injury to his right hand. Two fingers had been amputated and the remaining two were stiff. With his past experience in a printing shop to help him, he was able to finish the training in eight weeks and then to obtain a position at $19 a week. The foreman of the shop is now willing to accept as pupils men who have one good hand and the thumb and index finger on the other.

The operation of the monotype keyboard, a process very similar to typewriting, can be done by a man with both legs amputated or with other severe injuries which make seated work necessary, but there are union rules which bar keyboard work to anyone without five years' experience in the printing trade. A good keyboard operator can earn about $30 a week, and the field is an excellent one for cripples.

The mechanical drafting class was started primarily for the purpose of providing training for men and boys who have lost an arm. When it was first proposed that such a class should be started, leading engineers were questioned as to the possibility, in their opinion, of a one-armed man's becoming a successful draftsman. The replies were unanimous that the work was out of the question for men who had not two good hands. It was known, however, that in the reëducational schools of France drafting had offered good opportunities for men with arm injuries, and the Institute resolved to make the experiment. Desiring to secure as teacher a man who would have the needed confidence in the capacities of his pupils, the Institute sought as instructor a one-armed man. A man so handicapped was found, and under the inspiration of his example and teaching a number of one-armed men have successfully completed the course.

The first pupil was a Scandinavian who had

lost his left arm in a lumber mill. In his search for work he had drifted to New York and obtained a job as messenger at $7 a week. He was interested in lettering and sign-painting but had been unable to obtain employment in that line. After three months' training in mechanical drafting, he has obtained a position with one of the large engineering firms of the city at a salary of $16 a week. Another pupil had lost his right arm at the elbow. After slightly longer training, during which his left hand learned to use his instruments and his sensitive stump to hold the T-square and triangle, he was advantageously placed with a maker of thermometers. One of the most severely crippled men that the Institute has been able to help, a man with strong arms but with no power to move legs or back, received special training in small patent office drawings, being unable to bend over the board, as required by larger drawings. His work was so good that he left the class for a position in the Edison Laboratories. The first pay envelope he had ever received contained for one week's work $25. Another pupil still in the class has lost both legs and one arm.

Graduates of the class are, of course, not expert draftsmen. They have simply received a thorough training in tracing and a grounding in detailing; more cannot be done for them in a course lasting only a few months. The object of the course is to enable them to secure and hold down a position in which they can earn a living wage while they are perfecting their skill.

The course in oxyacetylene welding and cutting, judged by the rapidity with which the pupils are placed and the wages they receive, is one of the most successful at the Institute. In shipbuilding, in motor construction, in the maintenance of railways, and in all machine repair work there is a crying demand for men who know how to use the oxyacetylene torch. So eager are employers to obtain trained workmen that they come to the shop and take the pupils away before they have finished the course. The trade is a popular one with disabled men because it can be learned in a short time and because the wages are very high considering the degree of skill required. Welding is taught in from four to five weeks; cutting in an even shorter time. The wages earned by graduates average about four dollars a day.

Fortunately the trade is within the capacities of a one-armed man, always the most difficult subject to retrain or place in employment. In the experience of the Institute welding can be done by a man with one good hand to manage the torch if the other arm is fitted with a working appliance capable of holding the strip of adding metal; cutting requires only one hand. One of the earliest pupils in the shop was a former boilermaker who had lost his right arm. He is now earning $4.15 a day. Another was an untrained Italian boy with a badly maimed hand. He has now a good position with a street railway company. Just recently there entered the class a man who had been a worker on submarine fittings, a skilled mechanic incapacitated by an injury to his left hand. After training as a welder, he went back to the shipyard to earn as much as before the accident. His injured hand, moreover, is constantly improving under the exercise he gets from the work.

The equipment of the welding shop consists of six welding stations, a cutting station, anvil, cutting shears, welding tables, and a gas generator. It is housed in a small one-story brick annex built for the purpose. A torch with a slightly different control has been devised for men who must hold it in their left hand.

Motion picture operating, also, is a rapidly growing industry, and in consequence the demand for trained operators far exceeds the supply. Under these conditions the wages are naturally good. The training period is also brief; the Institute course enables a pupil to qualify for a license as operator in from three weeks to a month. He can then begin to earn $20 a week, with the prospect of an increase as he becomes more proficient. Many disabled men find the opportunities offered in this field very attractive, and the course has been well attended. In no case has there been any difficulty about placing the men in good positions. Men with leg disablements are not at all handicapped if they can stand; operators must, however, have two good hands.

The first man that applied for the training was a sailor who had been severely injured by an explosion on a battleship. The necessity of returning to a hospital for further treatment interrupted his course, but he is determined to return and finish so that he can join the men overseas as a Y. M. C. A. operator.

For teaching purposes the classroom is equipped with two projectors, a large asbestos

booth, and such electrical apparatus as is needed to give a thorough understanding of the work. The booth is so situated that films can be shown in the large auditorium as well as in the classroom, an arrangement which permits the knowledge of the class to be put to practical use. A textbook for the use of classes in motion picture operating has been prepared by the instructor and is now being set in type in the printing shop.

The class in jewelry making, recently installed in the Institute, has been conducted for the benefit of crippled and deformed boys, under other auspices, for the past nine years. It has in that time clearly demonstrated its usefulness. The course is longer than others at the Institute; a period of from eight months to two years, depending upon the talents of the individual boy, has been found necessary to give pupils the grounding in the trade which they must have in order to secure employment. For grown men, disabled by industrial accidents and eager to obtain a paying job as soon as possible, the time is too long. Boys well-trained in the elements of the trade have easily obtained employment.

In the case of disabled soldiers or sailors there is no difficulty about their maintenance during training. By the terms of the rehabilitation law they and their families are supported during the period of training. How civilians disabled by accident or disease are to be supported while they are attending classes is more of a problem. For a certain period of time after their accident workmen disabled in industry receive workmen's compensation; if they take their training before the time limit is up, the compensation will often suffice for their support, but the general tendency among men receiving compensation is not to seek either employment or training until their compensation is exhausted. Then, when destitution is staring them in the face, they apply at the Institute for help. These cases, if accepted for training, have to receive a maintenance allowance from the Institute. The money is not given to them outright, for there is no wish to make them forfeit their self-respect by accepting charity, but it is paid out of a special fund in the form of a loan without interest. Later, if the training has enabled a man to better his situation, he is expected to return the loan in easy payments. Some men, reluctant to burden their future with a debt, prefer to support themselves during their training by evening or part-time work, even if they are thereby compelled to spend a longer period in the school. The Institute has thought it wise to help such men in obtaining work and to make special regulations about the hours of their attendance in classes. In shops where the pupils are engaged in productive work, as in the artificial limb shop and in the printing shop, and part of the time in the drafting and jewelry classes, the pupils receive small wages proportioned to their skill.

Every effort is made by the Institute to get in touch with disabled men as soon as possible after their accident, and to describe to them, before they have become habitually idle and hopeless, the benefits held out by trade training. Constant relations are maintained with State industrial commissions, and a number of men have been sent to the Institute with liberal allowances for maintenance by commissions which thought this a wiser and more economical plan than long-continued compensation payments. The hospitals of the city are regularly visited by an experienced social worker, who talks with patients likely to be permanently disabled and tries to interest them in the training courses.

Many cripples have first learned that a man is not necessarily down and out just because he is disabled through a series of evening "parties" held at the Institute. Cripples from all over the city, all whom the Institute has record of, are invited, and a goodly number usually attend. The evening's entertainment is designed to arouse their ambition by showing them how other disabled men have overcome their handicaps. Lantern slides and moving pictures show how the war cripples of Europe have been trained in gainful occupations; other specially prepared films give a close-up view of the way certain severely crippled men have managed to live and work. In between the pictures disabled men who have made a success of their life tell of their experiences. The effect of such examples on men who have long thought there was no use in trying cannot be overestimated. In the days following these parties there is always a notable increase in the applications for employment or training.

Newspaper articles describing the work of the Institute are used to bring its facilities to the attention of men who cannot be reached in any other way.

When pupils have finished their training

courses, positions are secured for them by the employment department of the Institute. This department runs the only employment bureau for cripples in the city, placing not only pupils of the Institute, but all cripples who want work. Cripples are so difficult to place—the task demands so much special knowledge and individual attention—that the public employment offices can do little for them, and the need for a specialized bureau was very real. In the first ten months 700 cripples were registered, and 620 definite placements were made.

After a man has been placed, the bureau endeavors to keep in touch with him for some time. On one evening a week the office is kept open, and the men are asked to come in and tell how they are getting on. If they are having difficulties with their employer, the bureau attempts to make the necessary adjustments. When a man fails to call, a representative of the Institute visits him at his home or interviews his employer. Without such follow-up work the Institute feels that placement may be but temporary and valueless.

Training and placement are but two of the activities of the Institute. Its other work is national in scope, comprising the maintenance of a large library on the rehabilitation of cripples, the operation of an extensive department of research, the making of industrial surveys to determine employment opportunities for the disabled, and the conduct of a vigorous campaign of public education to inculcate a more constructive and helpful attitude toward the disabled. These activities, which cannot be described within the scope of the present article, are considered as important, if not more important, than the functions of training and placement.

## INFLUENZA: IS IT A HAZARD TO BE HEALTHY? CERTAIN TENTATIVE CONSIDERATIONS.

BY D. B. ARMSTRONG, M.D., FRAMINGHAM, MASS.

*Assistant Secretary, National Tuberculosis Association; Executive Officer, Framingham Community Health and Tuberculosis Demonstration.*

IN an unstable situation complicated by numerous unknown quantities, as is obviously the case with reference to the prevailing pandemic of influenza, discussion is apt to be based on casual individual observation rather than on scientific analysis of group facts. Nevertheless, it is frequently the case that scientific attention to the apparent indications of these relatively irresponsible observations may lead more or less by chance to discoveries of profound importance. Consequently, it has seemed to the writer to be of theoretical interest and, possibly, of practical importance to attempt an analysis of one of the prevailing opinions among the medical profession, in reference to so-called influenza and its complications.

At the American Public Health Association Conference in Chicago, during the week December 9 to 14, where much attention was given to influenza, the opinion was frequently expressed that the disease seemed to be characterized by a special virulence, and by a relatively high mortality among those individuals in the prime of life who, before the attack, had been in the best of physical condition and freest from previous disease. In other words, "influenza kills the husky!" If this is true, are health educators justified in advising the hygienic life as a measure of protection against the disease? Is it reasonable to assure the public that the pink of physical condition is a protection against infection? Is the "Keep Fit" doctrine sound? What should be our policy if influenza is most likely to attack and to kill the healthy.

It is safe to say that this assertion is made by competent clinical observers in both army and civilian life. Is it a valid assertion? Certainly it is one of the findings of common experience, universal enough to justify serious attention. Yet an analysis of certain figures may indicate that this semi-popular medical opinion may be in part misleading.

It is evidently true that the disease has a relatively higher mortality among the "husky" than it has among the weaklings. Is this a relative or an absolute difference? Certainly both the incidence and the fatality rate seem to be relatively less among the under-nourished, the physically handicapped, the anemic, and the tuberculous (either active or arrested). May it not be, however, that the difference is only a relative one, and that the variation from a theoretically normal incidence and fatality rate (of course undetermined) is rather in the direction of a relative degree of protection for the weak, than in the direction of a relative degree of susceptibility for the strong? May it not be that

it is not so much that the husky die, as that the weak live?

In Framingham, for instance, where, owing to the organization of the Community Health and Tuberculosis Demonstration, a reasonably careful analysis of some of these factors has been possible, it is found that in the first epidemic (excluding the subsequent recurrence), whereas about 16 per cent. of the entire population was infected, only 4 per cent. of the tuberculous group in the community was infected. Furthermore, most of these tuberculous cases were of the arrested type, and were going about the community, taking part in industry, exposed to the same degree of contact as was the case with the normal population. Indeed, when the arrested group is considered by itself, excluding active cases under treatment at home, the rate of incidence of disease is only 2 per cent. Findings from other communities presented at Chicago bore out the Framingham experience. It would certainly seem from this that the under-par people, particularly the tuberculous, had less influenza than the supposedly normal group. It may also be stated that the fatality rate was equally in contrast to that for the town as a whole.

Data from other communities, indicating another approach to this same problem, based as yet, it is true, on observation rather than on statistical findings, would indicate a similar relative degree of protection for the highly tuberculized. It is stated that in Washington, D. C., and in St. Louis, where there are large negro populations, the extent of influenza, fatal and otherwise, was relatively much less among this negro population than for the white population, or for the cities at large. Everyone is, of course, familiar with the high degree of tuberculization among the negro population wherever found. While this is, perhaps, not a complete refutation of the assertion that the husky succumb more readily to acute respiratory disease, it does indicate that, possibly, "the shoe may be on the other foot," and that those individuals who are suffering, or who have suffered, from a chronic respiratory disease have a relative degree of protection against an acute infection of a respiratory character. In any event this problem would seem to justify further study. At any rate, it looks as if the really conspicuous factor was the comparative immunity of the "weak."

Army medical officers have frequently asserted that in the camps the northern boy lived while the southern boy died; the city boy lived, while the country boy died. One ordinarily thinks of the country boy as the huskier type. Is he not also less frequently immunized because of his less frequent and constant infection and exposure? Is he not less frequently tuberculized? Is not the northern city boy, while apparently less healthy, favored by a natural process of vaccination through chronic respiratory disease against acute infection?

It has been further stated that this supposedly superior susceptibility for the healthy individual is true for all types of the acute infection. Assuming that the observation is based on the fact of a *relative* difference, as pointed out above, is it true that this difference applies to acute infectious disease in general? It has been asserted, for instance, that in typhoid epidemics, the big, strong, healthy, previously above-par individual is the one who falls the readiest victim to fatal disease. Is this true for typhoid fever, or is it rather that the typhoid infection lowers the resistance to the establishment of acute respiratory disease, and the husky individual, previously "unvaccinated" succumbs to the acute respiratory complication? This, of course, is apparently what happens in so-called influenza. It has been generally accepted that the present epidemic is a disease caused by a micro-organism at present unidentified, a disease which is characterized by a lowered resistance, permitting the invasion of pulmonary tissue by the influenza bacillus, one or more forms of streptococci, one or more forms of pneumococci, etc., —an invasion apparently secondary to the initial attack. It would be interesting to see if an analysis of mortality among the husky in a typhoid epidemic would not show that the apparent relative susceptibility of this type of individual was based on a difference in resistance to respiratory disease rather than to typhoid fever.

If it is true that a variety of natural vaccination through chronic respiratory disease gives those partially incapacitated by the chronic diseases a relative degree of immunity against acute respiratory invasion, is it a problem of immunization alone, or is there, back of this factor, a race stock factor that must also be given some consideration?

It is known, as was demonstrated in a study in Washington, D. C., several years ago, that

negroes, exposed to similar environmental conditions as whites, will have tuberculosis morbidity and mortality rates two or three times the rates found in the white stock. As was pointed out above, it is believed, though not yet definitely statistically certified, that a corresponding difference, in reverse ratio, exists between these two race stocks as regards influenza morbidity and mortality.

In Framingham, where it has been possible to study both the tuberculosis and influenza situation from the racial point of view, the chief contrasts have been found between the Irish race stock on the one hand, and the Italian race stock on the other. An examination of a large percentage of the population, showing an incidence of 2.16 per cent. for tuberculosis (active and arrested), for the groups as a whole, indicated an incidence among the Italians of .48 per cent., in contrast to an incidence among Irish stock of 4.85 per cent. This same difference is borne out in a more extensive way by a recent analysis of New York State mortality findings by Dublin. In the influenza epidemic, on the other hand, from figures based on reported cases in the initial outbreak, it may be stated that there was reported approximately four times as much influenza and pneumonia among the Italians as was reported for the rest of the community, made up in large part of Irish and Irish-American stock either foreign born, or first and second generation native born. Here we find a race stock with a high susceptibility to tuberculosis and possibly a relatively great immunization by this chronic respiratory disease against acute respiratory infection, presenting a comparatively low incidence of acute respiratory disease, in contrast to a race stock relatively resistant to the tuberculosis, consequently unimmunized against acute respiratory infection, and consequently showing a correspondingly large amount of acute disease.

All of these Framingham findings are, of course, based at present on comparatively small numbers and incomplete returns, and are, therefore, inconclusive. They are stated with reference to the initial influenza outbreak—possibly the recurrence of the disease may alter the tentative conclusions. In any case, they are presented merely as suggestions, possibly carrying sufficient validity to justify an hypothesis, indicating the desirability of similar and, if possible, more accurate analyses elsewhere to substantiate or repudiate the hypothesis. If the theory is based on an element of truth, is it race stock alone that is responsible, is it race stock plus natural vaccination, or are there other unknown biological and, perhaps, statistical factors concerned? In any case the initial casual assumptions seem to indicate the desirability of further study. Age and sex factors must be considered. Environmental problems must be studied and compared. The special knowledge of the immunologist and the biologist must be brought into play.

Should subsequent investigation prove that chronic respiratory disease, regardless of the race stock factor, and particularly tuberculosis, serve as a measure of protection against acute disease, what would be the bearing of this conclusion upon the hygienic program? It would seem that it is only a relative and not an absolute hazard to be healthy. Certainly the advantages of being vaccinated against acute infection by chronic disease are outweighed by the cost to the individual and the community of the chronic disease itself. The present high incidence of tuberculosis morbidity and mortality is scarcely justified as a preventive measure against the relatively incidental, sporadic, and less costly acute infection. At all events, if an immunity thus acquired through "natural" channels can be demonstrated to be of distinct worth, the solution of our problem must be found, as was the case with smallpox, in the perfection of an artificial immunization procedure, eliminating the tremendous price which society may now be paying in order that the weak, under certain conditions, may have a better chance than the strong.

The suggestions, as considered above, at least illustrate the necessity for approaching the problem with an open mind, for following up the leads by scientific study, and for meeting the opportunities of public hygiene in a spirit characterized less, perhaps, by an attitude of ready assumption and more by an insistence upon fundamental imaginative inquiry.

## LESSONS FROM A STUDY OF ONE THOUSAND DIPHTHERIA DEATHS.

By Bernard W. Carey, M.D., Boston,
*Epidemiologist, State Department of Health.*

A statistical study made by the Massachusetts Department of Health of one thousand deaths due to diphtheria has taught several interesting and important lessons.

Deeply concerned by the apparent apathy of physicians and organized health agencies towards the failure of the morbidity rate to decline while the mortality rate has been so markedly reduced by the use of antitoxin, the department started an investigation to ascertain, if possible, what factors might be responsible for this condition and to remedy it if possible.

The fact that the morbidity curve has not followed the decline of the mortality curve means much, for in diphtheria we have one of the few conditions for which there is available accurate means for diagnosis both of the acutely ill, and of the healthy carrier, agencies for determining the susceptibility of persons with their subsequent immunization and specific therapy for treatment of the infected individual.

In order that the statistics might be uniform, blanks were prepared asking for the name, age, sex, school, social condition, date of onset, date of physician's first call, date of administration of antitoxin and amount, source of infection, form of the disease, date and cause of death.

From an epidemiological viewpoint, results were not different from what was expected, the age incidence agreed with figures set forth by the Federal Census Bureau, which states that "about 65% of all deaths from diphtheria and croup in the registration area for deaths occurred in children under five years." The statistics from our studies were as follows:

| | |
|---|---|
| 1 year or under | 20.0% |
| 2 years or under | 13.4% |
| 3 " " " | 11.9% |
| 4 " " " | 9.8% |
| 5 " " " | 6.9% |
| 6 years | 7.4% |
| 7 " | 5.5% |
| 8 " | 3.7% |
| 9 " | 2.1% |
| 10 " | 1.8% |
| 11 to 15 years | 3.0% |
| 16 " 25 " | 1.3% |
| 25 " 60 " | 1.1% |
| Age not given | 12.1% |
| | 100.00% |

*Sex.* Creighton states that "diphtheria is the only epidemic condition, besides whooping cough, which is more fatal to females than males in proportion to the number of each sex living." In the earlier age groups a slight increase in the male deaths has been found, while in the later age groups, females were seen in increased proportion. When one considers that as a rule females come in closer contact with the infection, acting as nurses for those ill, it is perhaps apparent why this increase in the female groups should occur.

*School.* The influence that school plays in diphtheria infection is one of extreme interest and importance. As the greatest number of deaths occurred in children under school age, it might first appear that they were not under school influences; but, the question naturally arises, did they receive their infection from school sources, or are they the source of school infection which has been carried from the home? As far as is known at the present time, there have been no statistics to prove just how great a part the school plays in the distribution of diphtheria in the pre-school group. A special investigation is planned to determine, if possible, just what relationship may exist between these particular age groups.

In the later age groups the school factor plays a large part in the spread of diphtheria. In the rural communities, with little or no school supervision, the disease is apt to spread rapidly, and occur as an outbreak of varying size. In the city, where there is more efficient school supervision, the taking of cultures with prompt detection of healthy carriers, and incipient cases, giving earlier recognition of the disease, prove an admirable means of prevention, and of control of diphtheria outbreaks.

*Social Conditions* seem not to play a very great part in the deaths, for while the greater number occurred among the poorer class, a considerable number of deaths occurred among the more well to do.

The most common cause for this was in the group of unrecognized cases with its mild insidious onset resulting in the late attendance of the physician, and the late administration of antitoxin. It was also found that many of the deaths followed intubation. This, of course, is a procedure instituted late in the disease and when the heart muscle, weakened by toxic agents of the infection, was not able to withstand the strain of added muscular resistance of this procedure. The question arises whether it would not be better to do a tracheotomy, having the opening permanent, with resulting freedom in breathing, than to intubate with the risk of the intubation tubes coming out or becoming plugged with exudate, necessitating reintubation.

*Source of Infection.* One result of the inves-

tigation showed that the source of infection was known in only 10.7% of the cases, and unknown, or not given, in 89.3%. Here is evidence that it is indeed hard to trace positively the source of infection when all groups of people are taken. It was found particularly difficult in the foreign element, who either could not or would not give the required information Among the English speaking groups, there was marked evidence that the interest in the epidemicity of diphtheria was lacking even in those cities and towns where health officers are employed on full-time basis.

The axiom that scientific diagnosis must precede intelligent treatment might well be paraphrased to intelligent epidemiological investigation must precede efficient control of outbreaks, for we surely cannot reduce the morbidity rates of communicable diseases with infection sources unrecognized and at large in their communities.

The seasonal percentage incidence of deaths was as follows:

| | | | | | |
|---|---|---|---|---|---|
| January | 9.5 | May | 3.8 | September | 7.2 |
| February | 9.6 | June | 5.8 | October | 10.9 |
| March | 7.0 | July | 2.8 | November | 12.6 |
| April | 8.5 | August | 6.3 | December | 12.3 |
| | | Not given | 3.6 | | |

This is of value only to confirm other statistics which have been compiled from other sources.

*Form of the Disease.* In the study of the deaths, laryngeal diphtheria was far more prevalent than other forms; pharyngeal was next in order of frequency and nasal form last. Many physicians appear to feel that membraneous croup is still a distinct disease and do not recognize it as a diphtheritic infection until too late. Perhaps one reason for the retention of this erroneous opinion is that due to faulty technique, positive cultures are seldom obtained in the earlier period of the disease. In order to obtain a positive culture in the beginning of this form of diphtheria, it is absolutely essential that cultures be taken from the larynx, and to do this a proper speculum, good light, and an assistant are needed. It is, however, under these conditions, perfectly feasible, and if employed would mean the earlier recognition of the disease and administration of antitoxin with resulting lowered mortality.

This difficulty of culturing does not exist, however, in the pharyngeal type and some other reason must be sought to account for the excessive number of deaths. One of the most prominent appears to be that in many instances the condition is unrecognized and is treated as a simple tonsillar infection until too late for the antitoxin to be efficacious. The nasal type also plays an appreciable rôle in our deaths. Many histories show that this condition was unrecognized and the treatment in many instances was that for a catarrhal infection or "common cold."

The obvious deduction to be made is simply this: that a culture should be taken in all conditions where there is a possibility, even though remote, for diphtheria to be suspected. Here, without doubt, is the basic feature which plays the greatest part in keeping the morbidity and mortality rate higher than it should be and one that can be corrected if consistently borne in mind.

*Causes of Deaths.* In general, statistics classify the deaths in diphtheria as those due to cardias, respiratory, or toxic causes. It seemed, however, that an analysis of these causes should be made to see if it would be possible to ascertain any more definite information as to the exact cause of death. Approaching this angle of the investigation by inquiring first the number of days the patients were ill without medical attention, our findings were as follows:

| | | | |
|---|---|---|---|
| 1 day .....17 | 5 days .....35 | 9 days ..... 2 | |
| 2 days .....34 | 6 days .....28 | 10 days .....14 | |
| 3 days .....41 | 7 days .....39 | 11 dys. or over 20 | |
| 4 days .....37 | 8 days ..... 6 | Several days .42 | |

In other words, 23.1% were sick a week, 4.2% were sick from one to two weeks, and 4.2% were ill several days without medical attention.

It is amazing that so many children should be so neglected by those responsible for their comfort and welfare. Something must be done to awaken in these people their sense of responsibility. It appears that education of this group of individuals must be undertaken to arouse them from their state of indifference or ignorance. How this result is to be best obtained may vary with the individuality or locality, but it is perfectly clear that health workers, worthy of their vocation, should bend every effort to this end, doing their utmost to save from needless deaths these children who form the very foundation of society.

Health authorities for years back have impressed upon the medical and lay minds the necessity of the early administration of antitoxin to achieve the best results, and they can

hope to achieve this reduction in the mortality rate only by constantly emphasizing on every occasion the necessity of calling the physician early in the sickness, laying particular stress upon the fact that the mortality of diphtheria, when treated with sufficient dosage of antitoxin, given within twenty-four hours of onset, is relatively nil.

In some instances it was noted that physicians waited for a laboratory report from their cultures before administering antitoxin. This is, of course, a mistake and the dictum that a person needing a culture should have antitoxin administered at the time of taking the culture is one which should be reiterated until the procedure is generally adopted by the entire medical profession.

One other factor which stands out demanding comment is that 7.6% of the deaths occurred in "unrecognized" cases. Here, indeed, is a sad state of affairs, for with the numerous laboratories scattered throughout the State there is no need for diphtheria being unrecognized. The State Department of Health, through its bacteriological laboratory, is ready to examine all cultures which may be sent in to them, and will on all positive cultures telephone or telegraph, at its own expense, the report to the physicians who have sent in the culture. Surely, with this free service of our laboratories, the free distribution of antitoxin and Schick material for detection of the non-immuned, and the toxin-antitoxin mixtures of immunization, we feel that we have some right to expect that these facilities will be used to effect a diminution of the morbidity rate as well as the mortality rate.

An alarming percentage of 11.8 of our cases were found moribund upon visitation by the physician. Here again is evidence for the necessity of awakening people, through educational methods, to their responsibility to their children.

Another source of deaths which the investigation showed in larger proportion than is generally recorded was that of sudden death which was stated to have occurred in 5.2% of the cases. In many instances, lack of nursing care was the responsible factor. Parents, ignorant even of the fundamental principles of nursing, were entrusted with the care of their children, allowing them to get up out of bed too early, or, through a mistaken idea of kindness, gave unsuitable food, which caused grave gastric disturbances resulting in vomiting, with its associate muscular strain and proving, in these instances, too much for the weakened cardiac muscles; and collapse, with death, resulted.

Another factor in the sudden death group appeared to be the repeated attempts at intubation where, for some reason, the tube was either not properly introduced or else expelled.

*Antitoxin.* The dosage of antitoxin was extremely varied in amount, the number of doses given, and the interval between dosage. In 29 instances, it was found that less than 3,000 units were administered. The amount increased from this to a point where a young child of three years received 225,000 units. The usual doses, however, seem to have been from 6,000 to 9,000 units. The number of doses varied from one to several on consecutive days, and in a few instances it was administered every four hours until death occurred. In one instance 80,000 units were given in this manner.

One striking feature was present,—in no instance did we find antitoxin given intravenously. In the early days of the use of serums there was a great deal of hesitancy in introducing directly into the blood stream foreign bodies, for fear of untoward effect, but with added years of experience it is now known that this procedure is not only feasible but that results are more rapid, more certain, and a much smaller amount of serum is required. It is most earnestly recommended that this procedure be used in those cases which are seen late in the disease.

With such a lack of uniformity in the use of antitoxin, it seems as if the medical profession should be informed, from authoritative sources, as to the most approved method of its use, its dangers through misuse, either in dosage or method of administration.

Particular stress should be laid, in the instruction of medical students, upon the necessity of properly administering antitoxin, thus avoiding the chances for anaphylactic reaction and impressing upon them the need of early and sufficient treatment.

Full realization of these facts can only lead to the conclusion that the progress toward eradication of diphtheria has fallen short of what reasonably might have been expected.

## Clinical Department.

### THROMBOSIS OF THE LATERAL SINUS.

By G. A. Moore, M.D., Palmer, Mass.

Report of a case of extensive thrombosis of the lateral sinus and jugular vein, probable thrombosis of the cavernous sinus, perisinus abscess and anomaly of the lateral sinus in its sigmoid portion:

The recognition of sinus thrombosis, despite voluminous literature on its diagnosis, and one's personal experience, is sometimes very difficult. It is held by some writers that no reason exists why, in case of doubt, one should not uncover the sinus; but, in many instances, the question comes, not at the time of primary operation, when, indeed, it would add little if any, to the hazard to inspect the wall of the sinus, but at a subsequent time, when in an enfeebled patient the administration of an anesthetic is of itself formidable enough, not to mention an operation, that *a priori* cannot with certainty be called harmless.

The causes of sinus thrombosis have been enumerated by Adami[1] as 1, slowing of or stagnation of the blood; 2, eddying of blood (von Recklinghausen); 3, hemolysis; 4, bacteria and their products; 5, disease and injury of the vessel wall. Of these he regards the speed of the blood stream as important.

A. Braun[2] speaks of "the method of coming about" of thrombosis: 1, The inner table of the mastoid over the sinus may be diseased and an abscess form between the sinus and the inner table. This results in an inflammation of the outer sinus wall, which in turn leads to the formation of a thrombus within the sinus. 2, The inner table over the sinus may be diseased and cause an extension of the inflammatory process to the sinus wall without the intermediation of a perisinus abscess. The phlebitis results in a thrombus. 3, A thrombus may form in one of the smaller veins of the mastoid process and extend into the lateral sinus.

Among the signs and symptoms given by Pfingsten[3] are: Pain and swelling, headache, nausea and vomiting, chills, temperature from normal to high fever, disturbance of vision; optic neuritis, oedema of the lids, nose and forehead, vagus, glosso-pharyngeal, spinal accessory, hypo-glossal disturbances.

H. B. Graham[4] enumerates: Chilly sensations, chills, rapid rise and remission of temperature. "One chill is not enough to confirm a diagnosis; one should always wait for a second chill before operating where evidence is wanting otherwise to make a pretty positive diagnosis"; headache, vomiting, dizziness, choked disk.

J. H. Barnes[5] makes a point of: Chill with temperature of 103 to 104 during chill and 105 to 106 after, followed by sweating and decline of temperature even to normal.

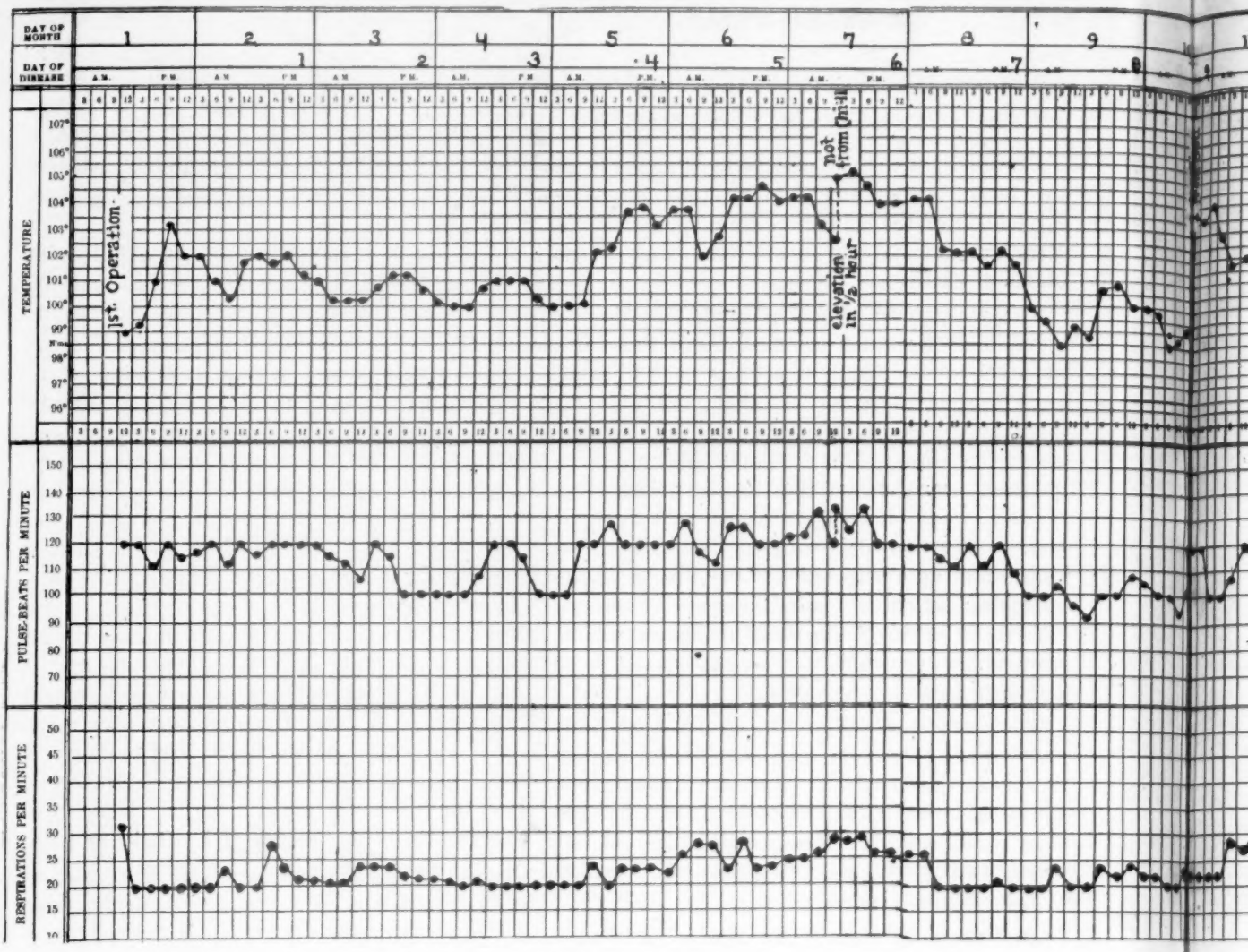
J. M. Smith[6] says: Nature's warning of an extension of the infection is practically always a chill accompanied by a sudden rise of temperature; at this time (early) we have a possible erysipelas, pneumonia, meningitis, adenitis, or sinus thrombosis to consider. With a total white blood count of 30,000 or more, suspect pneumonia; 20,000, suspect meningitis or erysipelas; 10,000 to 12,000, sinus thrombosis. He considers total white count very important and that it is of quite different import to find a total of 10,000 when the temperature is normal than when it is 106. Blood cultures are negative if the vessel is completely blocked by the clot. Important point is that in sinus thrombosis the patient's mind remains clear; also there is usually an absence of headache or pain.

A. S. Kaufman[7] in a report of five cases of sinus thrombosis says four were acute cases instead of the usual chronic. All showed atypical symptoms.

A. Braun[8]. A case of cavernous sinus thrombosis. Total whites, 36,400; polymorphs. 87%; large monos., 7%; small, 4%; trans., 2%. Eyelids oedematous and conjunctiva chemotic on same side; slight oedema opposite side; eyegrounds normal, pupils slightly dilated.

I. Friesner[9]. Report of case of cavernous thrombosis: Mastoid of pneumatic type, oedema of lids and conjunctiva, slight headache (one night), exophthalmos, vomiting (36 hours), polymorphonuclear, 80%; trans., 6%; total whites, 6,400; two days later, polymorphs, 86%; chills, fever to 106, disappearance of oedema.

J. G. Beck[10] gives symptoms of intracranial extension: Headache, nausea, temperature rise, small chills, Kernig's, Brudzinski's, Gorden's, Chaddick's, Oppenheim's signs, choked disk, increased spinal fluid pressure and changes in fluid. He remarks, "There are, doubtless, many cases of localized meningitis . . . . in which




most of the cardinal symptoms are wanting . . . . . ''

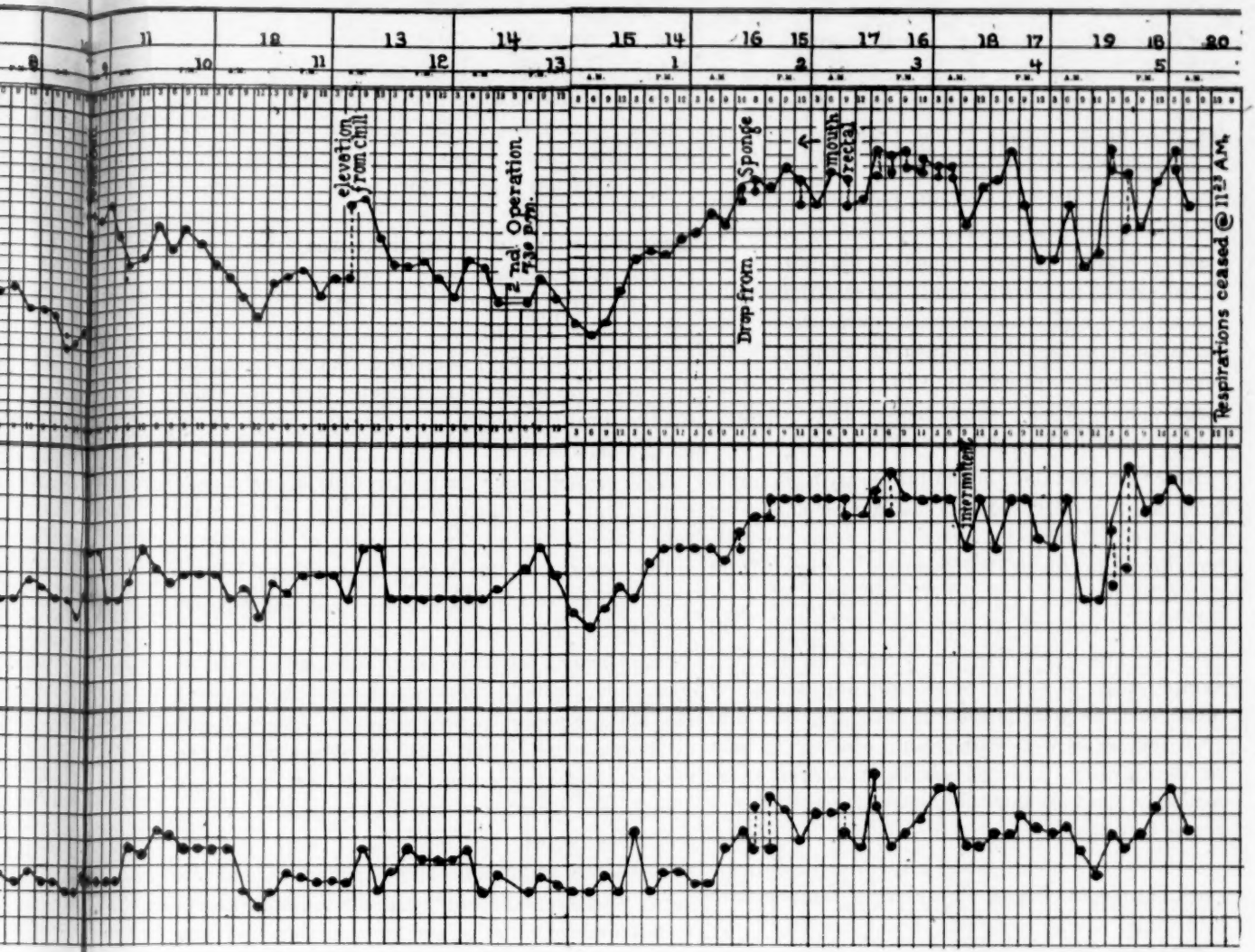
G. G. Hall[11]: Most pronounced symptoms of typical cases. Pronounced chill with sudden rise of temperature followed by prompt subsidence to or below normal, sweating, pulse and respiration according to temperature, choked disk in one-third of cases.

W. C. Phillips[12]: In a typical case the diagnosis is always difficult . . . . . A high temperature continuing several days after mastoid operation, especially where the operative findings have disclosed areas of necrosis of the bony covering of the lateral sinus and examination of the blood shows bacteremia, leucocytosis and a high polynuclear count, is at least indicative of an infective process of sufficient severity to constitute sinus thrombosis and the sinus should be examined.

Boenninghaus[13]: When, after an acute ear and mastoid involvement, in spite of adequate drainage (surgical treatment), the fever recurs after having dropped, then we should be suspicious of sinus thrombosis. Especially is this true if the temperature elevations persist over a number of days and become higher as the succeeding days pass.

These excerpts from a few writers show the general thought. In the case I am reporting the patient was an unmarried female of 36 years who never had been very well. She was of spare figure, anemic looking, the skull was of dolichocephalic type, auditory canal very small, in which the roof was sagging when first examined by me. Patient referred by Dr. Pearson of Ware because of acute mastoiditis.

Mastoid opened July 1, 1918. Pneumatic type; antrum, deeply situated, contained pus and detritus; infective agent, pneumococcus; sinus distant from posterior wall, destruction of bone very extensive, involving tip, zygomatic and posterior cells. These last extended an unusual




distance posteriorly and necessitated the severance of the mastoid emissary vein. The patient was returned to her room in splendid condition and in two hours was free from pain and nausea, and had a good night.

July 2nd. Patient felt well but the eye on the operated side (left) showed some redness, slight oedema of conjunctiva and a slight swelling of the lids; eyeground negative. Palpation revealed no unusual tenderness. The bandage was loosened a little, but the wound was not inspected.

July 3rd. No change in condition.

July 4th. Patient had been the same, but this morning the oedema of lids and conjunctiva on left was more pronounced and a slight oedema of the nose was manifest. Eyegrounds remained normal and the patient entirely comfortable. However, on account of the unusual eye condition the first dressing was done. All stitches were removed and a very close inspection of every part of the wound, assisted by probe, was made. This search revealed nothing wrong. The wound looked in splendid condition.

July 5th. Patient a little restless, mentioned a slight headache and a suggestion of nausea. This was entirely relieved by calomel and saline.

July 6th. Complained of slight sore throat and during this day the temperature rose rapidly to a maximum of 104; pulse, 126; respiration, 24; the pulse and respiration, however, were not much variant from the day of admittance. When awake the patient looked well, but when sleeping showed a peculiar change of color and looked "sick." She felt well, was bright, and on every dressing the wound looked good. The urine on this day decreased to ℥xxxi but was not pathologic. Résumé of six days. A patient who has felt well all the time and still feels well, not forgetting that on one day, there

was a little headache and nausea, which the patient said was scarcely worth mentioning, a slight feeling of sore throat and the oedema of eyelids and nose now disappeared. Eyegrounds normal, but a change in color when asleep and a marked rise in temperature.

July 7th. Patient says she feels well, but her neck is quite stiff, and swallowing is difficult. Left eye again shows oedema; abdominal reflexes slowed; Kernig and Babinski present. Patient felt chilly at times, temperature to 105. Permission sought to operate on sinus. Blood count showed total whites, 9,400; polys., 75.6%; large mono., 8.6%; small mono, 2.6%; trans., 9.2%; unidentified, 4%.

Later on this day, consultation with otologist from another city, when examination showed a clean wound with no suspicious area, no cells remaining to foster temperature. Kernig and Babinski present, abdominal reflexes active on left, almost ablated on right, oedema of lids and nose, eyegrounds normal. Consultant was not sympathetic to the idea of opening sinus because of the good appearance of patient and good feeling as well, clear mind, absence of pain or tenderness and of chills, no great leucocytosis, and a low polymorph. count for a grave infection.

July 8th. Patient much improved in appearance, appetite began to return, temperature subsiding.

July 9th. Patient further improved. Slept seven hours last night, awoke feeling well and hungry; temperature, 98.6; pulse, 100; respirations, 20. Eyegrounds normal, wound looked well at dressing, oedema of lids gone, urine output increased to ℥xxxiii; but Kernig and Babinski present and hands feel a little numb.

July 10th. Same as yesterday, temperature remaining under 100 until at 4.20 in afternoon a chill occurred, which lasted 30 minutes. Temperature not elevated during chill but rose immediately after to 103.4. The left eye became half closed from oedema and the muscles around the mouth twitched.

July 11th. Temperature has remained higher than on 8th and 9th and at 6 p.m. occurred a short chill (10 minutes), during which temperature did not recede, and after rose to 104.2. Patient is weak.

July 13th. Symptoms not so severe today. Permission given to operate.

July 14th. Consultation with Dr. C. A. Freligh of New York City. Blood total, white, 9540; polys., 76%; large monos., 7.6%; small, 10.8%; trans., 2.8%; unidentified, 2.8%. Dr. Freligh concurred in the belief of sinus thrombosis, after thorough examination, and at about noon operation was performed. Sinus opened by Dr. Freligh, jugular resected by writer. Anatomic anomaly of the sinus was found, consisting of a branch which ran posteriorly and upward, from midway in the perpendicular part of the sigmoid portion. This branch was complete in every way, the bone was grooved, the size was the same diametrically and the walls of the branch differed in no way from those of the true sinus.

The branch came to a rounded, blunt termination and near this end, was given off the mastoid emissary vein. The foramen of this vessel, while large, was not larger than others I have seen. The branch did not taper, being circumferentially the same in all parts.

The branch running backward and upward had above it, and between it and the knee of the sinus proper, a somewhat V shaped spine of bone which lifted out *en masse* while the rongeur was being used on the cortex at this locus, and revealed a perisinus abscess of considerable extent.

The sinus wall, in both the true sinus and the twig, was grey in color, firm to the touch, and free from granulations. At this point it was full of dense white (conglutination) thrombus and the branch contained the same.

The jugular was completely filled to within less than an inch of the innominate, with red (coagulation) thrombus. The portion between the end of the red thrombus and the innominate, was empty and slack and would, doubtless, have been collapsed but that it was held open by the nearby end of the thrombus.

In the skull, the clot extended to the torcular, but bleeding was finally established from this end. The anomaly of the sinus, the perisinus abscess and the extensive thrombus were the only notable features of the operation, the resection of the jugular presenting nothing unusual. Patient returned to room unshocked and in good condition.

July 15th. Patient comfortable. Temperature rose steadily to 103.2, and with this the patient spoke of feeling rather cold. Eyelids and conjunctiva oedematous. Eyegrounds nor-

mal. Some difficulty in swallowing. Transient pain in left forearm.

July 16th. Temperature rose steadily to 105.6, pulse and respiration in keeping. Temperature uninfluenced by sponging.

July 17th. Patient irrational, temperature, 106.4; pulse, 140 to uncountable; respirations, 32 to 44, with no change until death at 11.23 on July 18th.

The locus, of beginning formation of the thrombus, was, without doubt, in the anomalous branch and its junction with the sinus proper, for there the striations of platelet composition were most abundant, and grew less so the farther it was examined away from this point, until the character of the thrombus was changed to the red type.

It is interesting to return now to Adami's statement of causes.: 1, Slowing, or stagnation of blood; 2, eddying of blood stream; 4, bacteria and their products; and to Braun's "method of coming about . . . . .and an abscess forms between the sinus and the inner table. This results in an inflammation of the outer sinus wall, which in turn leads to the formation of a thrombus within the sinus."

Certainly there was, in this case, a condition of stagnation of blood in the branch, and eddying of the blood stream at the point of juncture with the sinus proper. Bacteria and their products were manifestly present in the perisinus abscess. Whether the sinus wall would have been resistant enough to withstand the action of the perisinus abscess, had stagnation and eddying been absent, is rather a nice question.

There seems to be a plethora of reasons for the occurrence of thrombosis in this case. It is possible that the thrombus may have begun in the injured emissary vein and extended to the branch and sinus. A glance at the chart shows that the temperature did not touch the normal until the 11th day. Sometimes a considerable change of temperature occurred in so short a time as one-half hour, a notable example of this being shown on July 7th, when there was a change in one-half hour from 102.6 to 105, without chill. It is my practice in cases of this sort to take temperatures every hour, or hour and a half, as otherwise considerable fluctuations occurring between the three-hour periods escape our knowledge. Possibly, the sizable localized meningitis in this case made the temperature less typical of sinus thrombosis. One is likely to consider chill as antithetic to fever, but in this case there occurred that feature mentioned by Barnes, namely, febrile temperature during chill (see chart, July 13).

Smith's classification of total white count significance receives some support in this case, and in many cases in past years I have found a consideration of total count valuable. In many cases of sinus thrombosis the condition (thrombosis) supervenes in cases whose blood reaction has passed through its highest expression of leucocytosis and high polymorpho. percentage in the prolonged initial infection of the ear and mastoid; I am speaking now of chronic cases. The blood picture, the temperature and the peculiar change in the color of the patient were important considerations in the earlier stages of the illness, in the present case. Blood cultures were persistently negative, previous to the second operation and none was taken there after. Perhaps the explanation is that given by Smith, the complete blocking of the vessel by the thrombus.

This case emphasizes the importance of early operation.

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## American Medical Biographies.

### FITZ, REGINALD HEBER (1843-1913).*

REGINALD HEBER FITZ, clinician, teacher and contributor to the art and science of medicine, was born at Chelsea, Mass., May 5, 1843. His father, Albert Fitz, was a consul of the National Government; his mother was Eliza R. Nye—both being of unmixed English stock.

He received his preliminary education in the Chauncy Hall School, Boston, graduated A.B. at Harvard in 1864, and M.D. in 1868, and received an LL.D. in 1895. During his last year

* From the forthcoming "American Medical Biography" by Dr. Howard A. Kelly and Dr. Walter L. Burrage. Any important additions or corrections will be welcomed by the authors.

in medicine he was house surgeon in the Boston City Hospital. He then spent two years abroad with Rokitansky, Oppolzer, and Skoda in Vienna, and with Cornil in Paris; but the master spirit nearest akin to his own was Rudolph Virchow in Berlin, whose creation of a cellular pathology Fitz introduced to America, thus becoming our pioneer scientific pathologist. While in Berlin he wrote a paper on the changes in the cartilages of the bronchi in bronchiectasis in the fifty-first volume of Virchow's Archives.

On his return home in 1870 he settled down to practise in Boston, and at once entered upon his duties as a teacher, that extended through his whole life until his age retirement.

From 1870 to 1873 he was instructor in pathological anatomy in the Harvard Medical School, and from 1873 to 1878 he was assistant professor of pathology. In 1878 he was selected to succeed J. B. S. Jackson in the chair of pathological anatomy, the title being changed in 1879 to that of Shattuck Professor of Pathology. He retained this position until 1892, when he was succeeded by W. T. Councilman, and when he himself became Hersey Professor of the Theory and Practice of Physic in the Harvard Medical School. His pathological lectures, exponents of the new and quickening doctrine of the "cellular pathology," were thronged with interested students and were remarkable "in form and in substance, models of clear and precise exposition, admirably delivered in language, every facetted word of which seemed to have been chosen so that it and it alone could have filled the place." In 1887 he was made a visiting physician to the Massachusetts General Hospital.

Fitz entered upon his career as a teacher at the critical time when the faculty had just adopted a progressive course of instruction to cover a term of three full years, with examinations in writing, and with the resolution that no student should graduate without passing in every department. In the year in which he became an instructor, and before he became a member of the faculty, in 1871, the services of H. P. Bowditch were secured as assistant professor of physiology, and the faculty engaged to do its utmost to provide the latter with a laboratory. The same plans were entered upon in chemistry, and thus two definite policies were adopted of far-reaching significance for the future of American scientific medicine,—namely, the teaching of the sciences upon which medicine depends by the laboratory method, and the employment as teachers of these sciences of men not harassed by the practice of medicine.

For twenty-eight years Fitz was on the important committee of courses of medical studies and for seventeen years guided its deliberations. His influence upon the development of scientific medicine in America in this way was, perhaps, more important than his two brilliant medical discoveries. That the Harvard School did much to inspire and help mould the Johns Hopkins course, I well know.

In taking up his general medical and consulting practice, Fitz had the rare advantage of a background of thorough training in pathology; in cultivating his diagnostic powers he had a habit of examining carefully the cases in the surgical ward before operation. Also he required that a clinical diagnosis should be made known before an autopsy.

In 1894 he was president of the American Medical Association, and in 1897 president of the Congress of American Physicians and Surgeons. In 1908 he retired from his chair as emeritus professor; he gave up his hospital position at the age limit of sixty-five years, and devoted himself for the remaining five years to private practice. On his sixty-fifth birthday his former pupils and assistants issued a volume in his honor entitled, "Medical Papers Dedicated to Reginald Fitz."

It was due to Fitz that Dr. Henry Francis Sears made his noble gift of the "Sears Pathological Laboratory" to the Harvard Medical School, the first laboratory in America used exclusively for the study and teaching of pathology.

Fitz's writings are sharp, critical and lucid. The titles to his papers number about thirty-eight. His best-known claims to fame are vested in two theses, "Appendicitis" and "Acute Pancreatitis."

The classical article on appendicitis was presented at the Association of American Physicians in 1886, with the title, "Perforating Inflammation of the Vermiform Appendix," and he gave here, for the first time, a clear picture of the clinical course and diagnostic signs of the disease, together with its pathologic changes, advocating a radical operation as the

immediate objective and the only rational means of saving life where there is not a prompt subsidence of threatening symptoms. His conclusions were firmly based upon some two hundred and fifty-seven cases of perforating ulcer, and two hundred and nine cases diagnosed as typhlitis and perityphlitis and perityphlitic abscess, in which the diagnosis was clinical only and not anatomical. The treatment recommended at the outset was opium, rest and liquid diet, and food in small quantities often repeated; but if general peritonitis seemed imminent at the end of twenty-four hours, the abdomen should be opened and the appendix removed.

In 1889 he analyzed a further series of seventy-two cases, occurring since 1886, and urged the interval operation. In this year he delivered another memorable address before the New York Pathological Society on "Acute Pancreatitis." He carefully distinguished the hemorrhagic, the suppurative and the gangrenous forms of acute pancreatitis. Since that time this disease, which was at first regarded as rare and curious, has come out into the light of day, and is now well known, and often diagnosed by all educated physicians and sometimes cured by operation. Here appears the earliest suggestion that fat necrosis is the result of a lesion of the pancreas, confirmed a year later by Langerhans.

In 1888 Fitz read a paper on "Intestinal Obstruction" before the first Congress of American Physicians and Surgeons, based on a critical study of two hundred and ninety-five selected cases; here again the conservative physician urges surgery.

In 1903 he again addressed the sixth Congress of American Physicians and Surgeons on pancreatic disease, and was elected president.

In 1875 he wrote on tubo-uterine or interstitial pregnancy (*American Journal Medical Science,* 1875). He wrote the article on diseases of the esophagus for the "Twentieth Century Practice," New York, 1896. The following year, in collaboration with H. C. Wood of Philadelphia, he published "Practice of Medicine."

Perhaps his last article is "Tests for Renal Function Based on the Secretive Excretory Activities of the Kidney" (*Boston Medical and Surgical Journal,* 1913, clxix, 384-386).

He prepared a large number of anatomical specimens to illustrate his lectures; these are now in the Warren Museum, Harvard Medical School.

Dr. Fitz married Elizabeth Loring Clarke, daughter of Dr. Edward Hammond Clarke of Boston, and they had three children, a son, Reginald, following his father in the practice of medicine.

It seemed to be Fitz's mission to explore obscure medical territories and thus to enlarge the domain of his aggressive surgical confrères. As a lecturer he was always clear, comprehensive, logical and thorough. His diction was rapid and he always seemed to have more to say than could be crammed into an hour. The knife of logic in his hand, like that of steel in the hand of the surgeon, was guided solely by the intellect, as the unwary student often found. His critical faculty was very highly developed and fairness of mind was instinctive.

He died September 30, 1913, at Brookline, Massachusetts, after an operation for chronic gastric ulcer.

Howard A. Kelly, M.D.

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## Book Reviews.

*The Surgical Operations on President Cleveland in 1893.* By W. W. Keen, M.D. Philadelphia: George W. Jacobs & Co. 1917.

This book gives an account of the surgical operations performed upon President Cleveland by Dr. Joseph D. Bryant, assisted by the author, Dr. Keen. The operation was a triumph in both surgery and secrecy. Because of the grave financial situation which was threatening the nation at the time, it was essential to the nation's destiny that the knowledge of the President's critical condition should be kept from the newspapers and the public. For this end the operation was performed on the yacht *Oneida.*

The author gives a detailed account of the two operations performed on the President, who was suffering from cancer of the mouth. During the first operation, under nitrous oxide, the two left upper bicuspid teeth were extracted and necessary incisions were made in the roof of the mouth. Ether was then given to the patient and the entire left upper jaw, from the first bicuspid

tooth to just beyond the last molar was removed. The whole operation was done within the mouth, by means of a cheek retractor. A second operation was necessary for the removal of some suspicious tissue. In a little more than a month the President, pronounced "all healed," was able to hold a special session of Congress.

*Shell Shock.* By G. ELLIOTT SMITH, M.D., F.R.S., and T. H. PEAR, B.Sc. Manchester: University Press. 1917.

"Shell Shock" is a discussion of the nature and treatment of a form of mental disorder which the war has brought to our attention. It is not, however, a disturbance peculiar to war conditions alone, for every symptom may be found in civil life. The source of the trouble may usually be found in the emotional rather than in the intellectual sphere. Therapeutic measures which may be applied as a remedy include firmness and sympathy, relief from anxiety, sometimes isolation, suggestion or hypnotism, and often work. The patient's condition must be diagnosed by true insight, and restorative methods must be rationally applied. Psychological analysis is of great importance; for by means of it, a mental condition may be reduced to its essential elements by dissecting its normal, abnormal and unconscious factors. The author believes that the importance of attaining the patient's full confidence cannot be overestimated, although this instrument must be used with great care and discretion.

This book is an attempt to awaken the nation to the need of abandoning its ignorant and superstitious attitude toward insanity and of diminishing the social stigma of the "lunatic asylum." It is essential, above all, to realize the necessity of treating these cases in their early stages. The medical profession should adopt a more intelligent and interested attitude toward psychiatry and should encourage more research work and original investigation. The defects in our national system are many. Psychiatric clinics, special hospitals, and a close affiliation between these and medical schools are needed from every humanitarian and scientific standpoint. The war is teaching us many lessons: among them is the recognition of the need of extending psychiatry beyond asylums, and of applying to the civilian population after the war some of the methods of alleviating suffering which are now being successfully applied to victims of shell shock.

*Text-Book of Nervous Diseases.* By CHARLES L. DANA, A.M., M.D., LL.D. Eighth edition. New York: William Wood & Co. 1918.

This new edition of a standard book is very welcome. Dr. Dana's book has been one of the best known and most used books on nervous diseases since it was first published twenty-three years ago. The changes are all to be commended and bring a new lease of life to this work. The chief of these are the condensation of the chapter on the anatomy of the nervous system, and the practical rewriting of the chapters on syphilis of the central nervous system, on poliomyelitis, epidemic cerebrospinal meningitis, and tumors of the brain and cord. The portion of the previous editions which treated of mental diseases has been omitted, but we are glad to see that the author intends to rewrite this part of the book as a separate work on psychiatry. This will be welcomed by all who are familiar with Dr. Dana's work. The final result of the revision of this book is to bring to us the results of recent advances in the field of nervous diseases in a volume which is at once authoritative, clear, and yet of more moderate size and price than any recent work on nervous diseases in the English language which is at all adequate. This book is to be especially commended to teachers for use in their classes where the students can not be expected to buy encyclopedic works, both on account of the expense and because of lack of knowledge in which direction their chief interests in medicine may lie at a future time.

*Burns and their Treatment.* By J. M. H. MACLEOD, M.A., M.D., F.R.C.P., Physician for Diseases of the Skin, Charing Cross Hospital, Royal Flying Corps Hospital. Henry Froude, Hodder and Stoughton. Oxford University Press.

This little book, Oxford War Primer, divided into eleven chapters, covers this subject in a very thorough manner, conforming largely to text-book style. The author classifies burns into those due to heat and those due to electricity, lightning, x-ray, radium, the sun, corrosives, and from high explosives. About half of the book is devoted to the description and treatment of burns due to heat. He follows Dupuytren's classification of six degrees, which is rarely used in this country. The book contains ninety illustrations which on the whole are not particularly good. The work is almost entirely clinical and the descriptions of the pathology brief. Much less attention is paid to the modern paraffin treatment than would be expected at the present time.

The chapter on burns from electricity is one of the very best that the reader has seen published. It is clear and concise and full of accurate description. A short chapter on burns from lightning is also valuable. X-ray burns are treated in some detail, but the account of radium burns is very brief and not very illuminating as to the character of the lesions. Dermatitis from high explosives receives much deserved attention and is well described. This little book has many points of value and should form a very handy reference book for practical use.

*Handbook of Operative Surgery.* By WILLIAM IRELAND DE C. WHEELER, (Mod.) B.A., M.D. (Dub. Univ.), F.R.C.S.I., Lieut.-Col. R.A.M.C., Surgeon to Mercer's Hospital, Member of Council, Royal College of Surgeons, Ireland; Surgeon to the Military Orthopedic Centre, Blackrock; and Hon. Surgeon to the Forces of Ireland. With an introduction by SURGEON-GENERAL SIR ALFRED KEOGH, G.C.B. Third Edition. New York: William Wood & Company. 1918.

This is a small book of 350 pages which has been brought up to date "in the hope that it may be of some assistance to students who are rushing from the medical schools into the service of the army and navy."

"An attempt is made in the present edition to provide an introduction to the type of operation which may confront the inexperienced practitioner in the military and civil hospitals at home. Thus one-third of the book is occupied with descriptions of the ligature of arteries and the various forms of amputations."

The book is clearly printed, well illustrated, and certainly concise. It remains open to question, however, whether it is to be considered better than other English textbooks, such as Treves, with which we are already familiar. In a book of this size certain procedures must be so briefly described as to raise the question whether such outlines are adequate for the inexperienced operator. With this slight qualification, the book is recommended, though not to the exclusion of the older volumes.

*The Medical Bulletin.* A Review of War Medicine, Surgery, and Hygiene. Published by the American Red Cross Society in France, 6 Rue Piccini, Paris: November, 1917.

The commissioners of the Red Cross in France believe that it is their duty to endeavor to assist in the scientific research work of the medical men caring for the American troops, that by such aid the troops may receive more quickly the benefit of increased medical and surgical knowledge, both in the prevention of disease and its treatment. A Research Committee has been appointed by the Commissioner of the American Red Cross in Europe, and under the supervision of this committee the research activities of the Red Cross are to be carried on. A research laboratory has been established in Paris where leading scientific workers are engaged. To disseminate the knowledge there gained, the Red Cross proposes to encourage periodic meetings of the investigators, and to make available the reports of the latest methods of treatment for war injuries and diseases by means of publication. The Medical Bulletin is issued for this purpose; it contains abstracts of papers read at the monthly meetings of the men engaged in scientific research, and also articles appearing in the French, English, and American journals. The Bulletin appears monthly, and should be most valuable to physicians and surgeons with the American Army in France. The first number of the Bulletin contains articles on such subjects as: "Surgery of War; Conclusions Adopted by the Interallied Surgical Conference," "A Convenient Method of Preparing Eusol," "Flavine and Brilliant Green," "The Reparation of Cranial Defects by Means of Cartilaginous Grafts," "Treatment of Wounds Infected with Bacillus Pyocyaneus." In the Radiological division of the Bulletin is an article on "Simplified X-ray Methods." Under Medical, there is an article on "Infective Jaundice" and another on "Trench Nephritis"; under Bacteriological and Pathological, an article on "Spirochetes occurring in the Urine of Cases of Pyrexia of Unknown Origin"; under Nervous and Mental there are articles on War Neurosis and Shell Shock; under Skin and Genito-Urinary are treated recent investigations in regard to venereal diseases and scabies.

*First Lessons in Spoken French for Doctors and Nurses.* By ERNEST H. WILKINS, ALGERNON COLEMAN, AND ETHEL PRESTON. Chicago: University of Chicago Press, 1917. Third Edition.

This small text-book, now in its third edition, is issued to help American doctors and nurses to understand what may be said to them in French, to make themselves understood in French, and to understand printed French. The facts and words of French are presented consistently in terms of sound, just as they will present themselves in France. French spelling is not studied until the latter part of the course is reached. For the representation of French sounds, a very simple set of phonetic symbols is used, corresponding very closely to that used in Grandgent's Short French Grammar. The book is not intended to take the place of a grammar, and it is recommended that the student supplement his study of this book with the use of a simple French Grammar. This book is of especial value to the doctor or nurse who expects soon to go to France, as vocabularies and a large part of the exercises are composed with reference to the particular needs of those employed in hospitals. Royalties from this book will be devoted to the Red Cross.

THE BOSTON
# Medical and Surgical Journal

*Established in 1812*

An independently owned Journal of Medicine and Surgery published weekly under the direction of the Editors and an Advisory Committee, by the BOSTON MEDICAL AND SURGICAL JOURNAL SOCIETY, INC.

THURSDAY, JANUARY 16, 1919

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## RECENT MEDICAL PROGRESS.

WITH the advent of peace and the New Year, it is fitting to review the achievement of medical science during the last few years. Out of the great war the doctor and the surgeon emerge with but little of the glamour of the conflict, but with a multitude of marvellous performances, each of epic proportions, to their credit. Modern medical methods have been splendidly verified and vindicated. It is said upon excellent authority that the total death rate, both military and civil, during the last three years is very little higher than what would have been considered an average one in the civilized countries of Europe sixty or seventy years ago.

In the writings of several members of the profession, various phases of the situation are summarized. Dr. W. W. Keen, in the *Yale Review*, contrasts the prevalence of typhoid fever in 1898 with its status today.

Typhoid has been one of the historic foes of armies. In the Spanish-American War every fifth man in our army of 107,000 was attacked with it. It caused more than 86 per cent. of all our deaths. Had the ratio held in the British army of more than 5,000,000 in the World War there would have been more than a million cases of typhoid; actually down to November, 1916, there have been only 4,571. Had the old ratio persisted in our own Army between September and February last we should have had 144,568 cases; we had only 119. And in the seventeen weeks ending April 4 last, a longer period than our war with Spain, we had only ten cases among almost a million men. Dr. Keen traces this result to preventive vaccination by methods perfected, since the Boer War, by Col. F. F. Russell of the American Army.

"The Doctor in War," by Dr. Woods Hutchinson, shows the medical progress made in this the most terrible war the world has ever known. The author points out that the average death rate of the first three great wars of the nineteenth century, the Napoleonic, the Mexican, and the Crimean, was 12.5 per cent. per year; of the last three wars of that century, the Spanish-American, the Boer, and the Russo-Japanese, it was 4.8 per cent.; of the present war, but 3 per cent. The modern soldier's chances of being killed in battle in a year's campaign is estimated to have been reduced to about one in thirty, of dying from wounds received in battle to about one in sixty, and of dying from disease to less than one in a hundred. Yet Marlborough's surgeon in the famous Blenheim campaign declared that hospitals were the most important cause of death, and in the war between Russia and Turkey in 1828, out of an army of 115,000 Russians who crossed the border not more than 15,000 ever returned home after serving in only two campaigns. Wellington, in the Peninsular campaigns, gave the first clear instance of a really effective medical service, crude as it was, and an historian declares that "the work of the army surgeons practically decided the result of the crucial battle by adding a full division to the strength of the English Army." Just about a century later the Japanese deliberately calculated that they could neutralize Russia's superior numbers by keeping 50 per cent. fewer men in the hospital.

So complete has become the doctor's control over wound infections that of the wounded who

survive six hours 90 per cent. now recover, of those who reach the field hospital 95 per cent., and of those who arrive at the base hospital 98 per cent.

In the Civil War, blood poisoning, hospital gangrene, erysipelas, and tetanus killed from 75 to 90 per cent. of the patients attacked by them. The very first thing given a wounded soldier today by the surgeon, before food or dressing for his hurts, is an injection of anti-toxin against tetanus. When the World War started, tetanus at once became common because of the small supply of anti-toxin available; the supply was increased, and by 1915 a case of tetanus was a great rarity.

Although the armies in Flanders and France have been in open trenches in winter weather, they have had less sickness and fewer deaths from pneumonia and all other diseases than they used to have in barracks in time of peace and far less than the general civil population at home. Inoculation protected them against typhoid, splendid feeding with plenty of meat and fat against pneumonia and consumption, fly campaigns against dysentery, shower baths and clean underwear against spotted typhus. Only three new diseases have appeared during the war: trench fever, trench nephritis, and trench feet, unless "Spanish" influenza is to be counted as new also. The fields of France and Belgium are saturated with bacteria to a degree surgery had never known. The soldier and his clothes became begrimed. A shell, striking, carried a bit of clothing of its own shape and size into the wound and with it multitudes of death-dealing bacteria; but his chances of recovery have been good if he has reached the surgeon early enough. Figures show that battles today are one of the least of the perils of war. In Napoleon's Peninsular campaign, however, of 460,000 lost, only 60,000 fell in battle. In the Thirty Years' War the population of Central Europe was reduced from 30,000,200 to 13,000,000; yet only fifty important battles were fought. In all probability. Napoleon's defeat in his last Russian campaign was due, not to snow and ice, but to spotted typhus.

Only as late as the time of Louis XIV. did hospitals come to be considered as an essential part of an army's equipment. Only sixty years ago, hospitals were held in apprehension by vast numbers of persons. The Japanese were the first openly to adopt the rule that the doctor's place is in the first line with the scouts, and to give the surgeon real power, with control of sanitation. In praising our fighting men, let us not forget, also, the splendor of the achievements of science in these recent years. Four-fifths of war's slaughter has been due to disease, and nine-tenths of that disease is preventable. Medical science is preventing it. That from 90 to 95 per cent. of the wounded recover is a victory for antiseptic surgery.

## FOOD VALUE OF SACCHARIN.

In a recent number of *Science* there appears an article by W. E. Burge of the Physiological Laboratory of the University of Illinois, on the substitution of saccharin for sugar. Much has been said during the past few years about food substitutes and there were many people who thought that the substitution of saccharin for sugar would prove of harmful effect. However, it has been pointed out by investigators that the amount of saccharin ordinarily used has not a bad effect. As a sweetener, it is five hundred times sweeter than sugar; but sweetening is only one function of sugar as a food. To be oxidized and thereby to furnish energy and to increase oxidation in the body are the two other functions. The second function was found to be lacking in saccharin, and this present investigation was conducted to ascertain whether the ingestion of saccharin increases oxidation in the body. Dogs were used as subjects of experiment and the results of the introduction by means of a stomach tube of dextrose and of "soluble saccharin" (prepared by the addition of a solution of sodium carbonate to the saccharin) were carefully compared. It had previously been found that the ingestion of sugar produced an increase in catalase and that catalase is the enzyme in the body principally responsible for oxidation. Therefore the present investigation had for its purpose the determination of the question whether saccharin would produce an increase in catalase, and thus an increase in oxidation in the body. It was found from data obtained after careful observation that saccharin produced a much more extensive increase in catalase than sugar did. Hence the conclusion was drawn that, as a sweetening agent, though not oxidized itself, saccharin facilitates the oxidation of other food materials by stimu-

lating the liver to an increased output of catalase and, contrary to the supposed harmful effects, it is really helpful in the ordinary diet, and especially so in diseases which are a result of defective oxidation.

## FRENCH MEDICINE IN THE PAST CENTURY.

RECENTLY there has been delivered at University College, London, a series of three lectures by M. Henri L. Joly, *professeur des sciences physiques et naturelles au Lycée Français.* On November 5 the subject chosen was "France's Share in Biology and Medical Science," and at the conclusion of this final lecture, M. Joly referred to the cordiality which has existed throughout the greater part of the last three centuries, except during the Napoleonic wars, between the French and British scientists.

In a brief outline of the work of Frenchmen of greater or less distinction among the natural scientists, he recalled the names of de Tournefort, Duhamel de Morceau, Buffon, and Gaudry. Lamarck he named as the founder of modern biology in France, Xavier Bichat as a pioneer in histology, and he declared Cuvier to be the greatest of French camparative anatomists. Van Tieghem, the botanist; J. H. Fabre, who popularized natural history in France; Armand Sebatier, and Lecoq were each referred to in covering the achievements of the period. The work of Pasteur having been covered in a previous lecture, M. Joly passed from Mondeville and Guy de Chauliac to the seventeenth century medical scientists, and noted briefly the work of Pecquet on the thoracic duct; of Paris on ergotism; Denys, who in 1667 performed transfusion of blood; Descartes, who did some useful work on visual accommodation, and Lavoisier, who contributed to the chemistry of respiration. He next spoke of Laënnec; of Magendie, the first experimental pharmacologist; of Le Gallois' work on the vagus nerve: of Flourens and his experiments in the use of chloroform on animals; of Claude Bernard and his pupil, Paul Bert, who organized the teaching of natural science in France; of Duchenne, who originated electrotherapy; of Broca, Charcot, Achard, Dastre, and of Carrel. Though little more than a brief sketch of the subjects was possible, the lectures served as an interesting review of France's share in the progress of science in the past few hundred years.

## WORK FOR THE ROCKEFELLER FOUNDATION.

IN a recent address, Dr. George E. Vincent, president of the Rockefeller Foundation, outlined briefly the work of the Foundation and its plans for the future. He explained the tuberculosis campaign which is being undertaken in France. Although it is still too early to state what progress has been made, recent reports tend to show that the disease will be materially abated. In China, a medical university is being erected in Pekin at a cost of $6,000,000 by the medical board of China, which is working in coöperation with the Rockefeller Foundation. Another university will probably be built in Shanghai.

Speaking of conditions in this country and in the tropical regions, Dr. Vincent is reported to have said in part:

"The Foundation has spent $21,000,000 on war relief work during the last four years, but will now devote its energies to human life. The international health board, which is dealing with the yellow fever and malaria situation in the tropical regions, is rapidly wiping out these maladies. The board is also fighting the hookworm disease which affects our southern states. It was recently found that 32 per cent. of one southern regiment were suffering from the ailment, while 54 per cent. of another regiment were similarly afflicted. By coöperating with the governments of the states the international health board has met with great success."

Dr. Vincent declared that a department of education and a department of health should be represented in the cabinet at Washington to safeguard the public against epidemics. He expressed the hope that, in future, science will be turned, not to destruction, but to healing mankind.

## MEDICAL NOTES.

7,468 SICK AND WOUNDED REACH UNITED STATES.—During the week ending December 20 wounded and sick soldiers numbering 7,468

were landed in the United States from the American Expeditionary Forces. The Surgeon-General's report shows that 5,282 were landed at New York and 1,640 at Newport News.

Excellent Health of Troops on Rhine.—The percentage of sickness among the occupying American troops is unusually low, according to the estimates of the third army medical officers. The number of cases in the eight evacuation hospitals within the evacuated area is about 4,000, most of them being influenza.

Figuring the approximate number of occupying troops as 300,000, the sickness amounts to less than 1½ per cent. In peace time the sickness among soldiers averages from 2 to 3 per cent.

The excellent condition of the men is due partly to good billets. There is just enough drilling to keep the soldiers in condition, and there is no overcrowding or illness from fatigue or exposure.

The third army has five hospitals in Coblenz and two at Treves and one at Mayence. Most of these are former German hospitals, and the equipment is modern in every detail.

Little Influenza in Army Camps.—Influenza is definitely on the decline in army camps. A detailed report of the health condition of troops in the United States on December 28 showed that in several of the large camps there was not a single case for the week ending December 20.

Influenza in Guatemala.—A report from San Salvador indicates that influenza is prevalent in Guatemala. The sanitary arrangements for the cities have been taken over by doctors from the United States.

New York's Methods of Combating Influenza.—New York's list of influenza casualties has been far below that of other cities in proportion to its population. Dr. Royal S. Copeland, health commissioner, has issued several orders which have been effective in checking the spread of influenza. Windows of all street cars remain open throughout all hours of travel, and electric fans are kept in motion in all subway stations and in cars. Nurses and women who have had elementary courses in nursing were mobilized and held ready for emergency calls. Theatres were relegated to a zone system and their hours of opening fixed by the health commissioner, and a relay system of travel was put into effect.

It is believed by health authorities that the welcome given the returning fleet may cause a large increase in the number of influenza and pneumonia cases. On December 27, physicians reported 269 new cases, an increase of 76 over the previous day's figures. Deaths totalled 36, an increase of 15. Seventy-seven new cases of pneumonia and 66 deaths were reported.

One-Seventh of Population Dead from Influenza in Tahiti.—A report from Papeete, Tahiti, gives an account of the tragic condition of the natives. Fully one-seventh of the population of Papeete have died from influenza; the elder generation has been practically wiped out by the disease. The natives are able to obtain little medicine and attention, although Europeans and Americans who escaped the disease, have done what they could to alleviate the suffering. The beginning of the epidemic has been traced to the arrival of a steamer there on November 17 with many cases of influenza on board. The infection has now spread to the island of Moorea, where there are no doctors. The deaths in Papeete have become so numerous that burial is impossible, and it has been found necessary to resort to the pyre.

### BOSTON AND MASSACHUSETTS.

Week's Death Rate in Boston.—During the week ending December 28, 1918, the number of deaths reported was 441 against 257 last year, with a rate of 29.32 against 17.35 last year. There were 57 deaths under one year of age against 37 last year.

The number of cases of principal reportable diseases were: Diphtheria, 40; scarlet fever, 12; measles, 8; whooping cough, 11; typhoid fever, 1; tuberculosis, 28.

Included in the above were the following cases of non-residents: Diphtheria, 2; tuberculosis, 3.

Total deaths from these diseases were: Diphtheria, 5; scarlet fever, 1; whooping cough, 1; tuberculosis, 21.

Included in the above were the following non-residents: Tuberculosis, 19.

Influenza cases, 2,363.

Influenza deaths, 163, of which 23 were non-residents.

$26,000 BEQUEATHED TO VARIOUS CHARITIES.—By the will of Joseph F. Noera of Cambridge, $26,000 has been bequeathed to various charities, including $2,000 each to the American Red Cross, to the Italian Red Cross, to the Holy Ghost Hospital, and to the Perkins Institution for the Blind.

CANCER PREVENTION IN MASSACHUSETTS.—The following interview with Dr. Reynolds, relative to a preventive campaign against cancer, is sent for publication by the Massachusetts Health Committee:

That a campaign of paid advertising and preventive education against cancer, such as was employed in the influenza epidemic, would result in saving annually many thousands of Massachusetts citizens over 40 years of age from intense suffering and untimely death, is the opinion of Dr. Edward Reynolds of Boston, Chairman of Directors of the American Society for the Control of Cancer.

"Of civilized people over 40 years of age," says Dr. Reynolds, "one man in every 14 dies of cancer and one woman in every eight.

"Cancer attacks more men and women over 40 than does tuberculosis, pneumonia, typhoid fever or any chronic disease. About 80,000 deaths annually in the United States are due to cancer.

"The majority of cases of cancer in the early stages are curable by surgery. The bulk of all cancers are in positions that permit of successful operation.

"After 40, it is highly unsafe to neglect persistent ulcerations, cracks in the skin, sores, lumps in the breast or chronic indigestion with loss of weight and change of color.

"Birthmarks, moles or warts which change their appearance or show signs of irritation should be regarded with suspicion and should be examined by a competent surgeon.

"Medicine is worse than useless. By producing a period of freedom from discomfort it delays the proper treatment. Medical cancer cures are all bogus. Barring the use of radium or similar means for small affairs of the skin, surgical operation is the only cure for cancer.

"In the earliest stages of the 'precancerous' conditions, the operation for cancer of the breast usually requires an incision only an inch or two long, necessitates carrying an arm in a sling for a few days, brings about only a trifling expense and causes no deformity."

INFLUENZA SITUATION IN BOSTON AND MASSACHUSETTS.—After consultation with Dr. Eugene R. Kelley, State health commissioner, Governor McCall recalled the order by which he directed the State Emergency Health Board to reassemble because of the recurrence of the influenza. Dr. Kelley convinced the Governor that the regular health staff has the situation well under control. The organization remains intact, and has retained the lists of nurses that were employed by it in the emergency of the summer.

Dr. John S. Hitchcock, in charge of the influenza branch of the department's work, has reported that the department has provided about 1,000 nurses and volunteers for community work. He believes that although many serious cases are reported, the influenza situation is not, and will not be, so serious as the epidemic during the summer.

The reports to the department on December 22 showed 1,577 new cases and 22 deaths for a 24-hour period. Boston returned 145 cases and 11 deaths; Cambridge, 47 cases; Gloucester, 37; Lynn, 45; Somerville, 52; Waltham, 35; Fitchburg, 41; Springfield, 80 cases and 5 deaths; Northampton, 19 cases and three deaths; Holyoke, 15 cases; Westfield, 27; Worcester, 14.

On December 23, 423 cases of influenza and pneumonia with 55 deaths were reported to the Health Department of Boston for a 48-hour period. Health Commissioner William C. Woodward believes that there are many more cases among the civil population which have not been reported. Christmas shopping is held partly responsible for the increased number of cases.

The report for the 24 hours ending at 9 A.M., on December 25, showed 361 new cases of influenza and 11 of pneumonia. The deaths amounted to 20, 6 of which were due to pneumonia.

What health officials hope may prove the crest of the recurrent influenza-pneumonia wave was attained in the 48 hours ending at 9 A.M., December 26, when a total of 778 new cases and 40 deaths were reported in the civil population of Boston. The reports of the State Department of Health show that 70 cities and towns report 1,707 new cases and 34 deaths. Eleven of these communities, however, covered periods of from two to six days.

Deaths were reported as follows: New Bedford, 4; Foxboro, 2; Northampton, 2 (two days).

New cases were reported as follows: Fall River, 71; New Bedford, 44; Plymouth, 43 (six days); Brockton, 64; Brookline, 57; Cambridge, 63; Foxboro, 35; North Attleboro, 20; Quincy, 67; Beverly, 32; Lynn, 117; Lowell, 24; Medford, 45; Somerville, 99; Waltham, 73; Winchester, 40; Worcester, 62 (two days).

Health Commissioner Woodward, while he considers that many of the cases reported may be merely common colds with only slight indications of influenza, is of the opinion that from 600 to 1,000 persons are attacked by influenza

and pneumonia daily in Boston. He believes physicians are still negligent in reporting cases and it is only the slight proportion of fatalities that deters the health department from taking drastic measures.

In the vicinity of Boston local boards of health feel little or no alarm about the situation, the malady being less severe than in the former epidemic, and the death rate much lower. There seem to be few calls for nurses, and local doctors are reported generally to be able to handle the cases.

Forty- eight deaths from influenza-pneumonia, the largest number in Massachusetts since the recurrence of the epidemic, were reported to the state health authorities on December 27. Of these deaths, 23 were reported from Boston. The total of new cases reported was 2,744, of which 454 developed in Boston. Springfield reported 10 deaths; Winchendon, 4; Charlton, 4; Attleboro, 3; New Bedford, 2; Easthampton, 1; Northampton, 1. Of other new cases, 130 are in Somerville, 121 in Lowell, 103 in Cambridge, 97 in Haverhill, 93 in Lynn, 90 in Malden, 74 in Easthampton, 71 in Worcester, 65 in Quincy, 64 in Brookline, 63 in Fall River, 62 in Charlton, 59 in Brockton, 58 in Fitchburg, 56 in Chelsea, 53 in Everett, 52 in Springfield, 52 in Attleboro, 35 in Winchendon, 32 in Belmont, 31 in Danvers, 31 in Northampton, 30 in Hingham, and 27 in Norwood.

Dr. W. C. Woodward, Boston Health Commissioner, is considering the advisability of making obligatory the wearing of masks by doctors and nurses attending influenza patients, and also extending such obligations to dentists and barbers when at work, since the disease may be conveyed easily by a person afflicted even in the incipient stages, if he breathes in the face of others. Legislative action may be required, however, for any such regulation.

Dr. John S. Hitchcock, director of the State Health Department's Bureau of Communicable Diseases, stated recently that the number of new cases throughout the State should cause no unnecessary alarm, pointing out that the percentage of deaths is small compared with the recent epidemic. Many cases of colds have been incorrectly reported as influenza. The following reports have been received recently by the health department:

Attleboro, 11; Barnstable, 43; Mattapoisett, 35 (seven days); Middleboro, 22; Provincetown, 13; Wareham, 20; Yarmouth, 19; Braintree, 35; Brockton, 12; Brookline, 23; Franklin, 16; Medfield, 75; North Attleboro, 30; Rockland, 18; Chelsea, 25; Everett, 21; Haverhill, 27; Lynn, 34; Malden, 39; Melrose, 15; Swampscott, 18; Arlington, 10; Lowell, 11; Saxonville, 24; Waltham, 23; Watertown, 17; Natick, 23; Southbridge, 20; Westboro, 15; Worcester, 41; Fitchburg, 19; Leominster, 36; Templeton, 25; Townsend, 18; Deerfield, 29; and Westfield, 12.

New Serum for Influenza Reported.—It has been reported that Dr. Bernard B. Carey, State epidemiologist, has stated that a new serum has been discovered which has been tried with some success at the Chelsea Naval Hospital. The serum has been developed from the blood of persons who have recovered from influenza and is injected by a special apparatus somewhat like a hypodermic needle. Several injections have usually been necessary for any noticeable improvement in patients. Dr. Carey believes that the results obtained by the use of this new serum are encouraging, although it is recognized as still in the experimental stage.

Dr. William C. Woodward has issued an appeal to persons who have recovered from influenza to give their blood to persons ill with pneumonia growing out of influenza. He is reported to have said:

"The life of a patient critically ill with pneumonia may depend upon whether or not some patient who has recovered from that disease, is willing to sacrifice a little of his blood to save the patient. When the crisis occurs no time is available for hunting around to find some recovered patient who is willing to aid, and for that reason the health commissioner asks that recovered patients who will, if necessity arises, give some of their blood to save their fellow-men, women and children, register their names and addresses at the health department now.

"As fast as names are registered they will be brought to the attention of the proper hospital authorities, and investigations can be made to determine the fitness of the person who offers his blood, for such blood, to be of value, must come from a person who is in good health now, but who has recently recovered from influenza-pneumonia.

"The serum from the blood of recovered patients is not looked upon as having any preventive value against influenza, and it can hardly be said to have demonstrated beyond a doubt

its curative value. Still, available evidence points very strongly to the presence in such blood of some substance or substances having a curative value, and at least in severe cases its use, under proper conditions, would seem to be fully justified."

The report of influenza-pneumonia cases in Boston for December 29 includes 259 new influenza cases and 31 deaths from this cause, with nine new cases of lobar pneumonia and nine death from this disease. On December 30, 624 cases and 21 deaths from influenza were reported, with 10 new pneumonia cases and 16 deaths from this disease. It is believed that this increase in the total number of cases is due to the fact that physicians have been negligent in reporting cases, and it is probable that at least 300 of the 624 cases are from two to five days old.

Increasing realization of the seriousness of the situation resulting from the recurrence of the epidemic was made evident recently to congregations in many of the churches in Greater Boston, when clergymen warned of the danger and advised that crowds be avoided, the body be warmly clothed, and sufficient sleep obtained.

Dr. William C. Woodward, Boston Health Commissioner, reiterated his request that physicians impress on the public the necessity of exercising precautions such as were taken during the previous similar epidemic.

He has under consideration several drastic measures, among them being the compelling of all physicians, nurses, dentists and barbers to wear gauze masks, and it is probable that he will have perfected arrangements within a day or two to put this measure into operation.

Figures reported to the State Department of Health for the 24-hour period ending December 30, include 1,927 new cases of influenza. Reports were received from 64 communities. Natick reported 2 deaths; Springfield, 4; Deerfield, 1; and Northampton, 1. The following new cases have been reported: Attleboro, 34; Fall River, 47; Falmouth, 21; Mattapoisett, 6; New Bedford, 36; Norton, 14; Plymouth, 47; Braintree, 44; Brockton, 26; Brookline, 36; Cambridge, 112; Hingham, 10; Norwood, 32; Rockland, 32; Danvers, 20; Gloucester, 34; Haverhill, 33; Lynn, 52; Malden, 44; Marblehead, 26; Melrose, 15; Swampscott, 15; Arlington, 32; Belmont, 21; Lawrence, 20; Lexington, 37; Lowell, 38; Somerville, 42; Waltham, 110; (two days); Framingham, 14 (two days); Newton, 24; Wellesley, 14; Worcester, 76 (five days); Ayer, 5; Northampton, 32; Springfield, 36.

Thirty-seven cases of influenza have been reported to the Board of Health in North Adams during the past three weeks. Local authorities stated that not a single death has resulted from the disease.

In Brookline, by order of the Board of Health, the schools, gymnasiums, baths, and recreation centers will be closed until January 6.

In Norton, the number of cases of influenza is increasing. Forty cases were reported in December 29.

The schools in Dedham were opened January 2, as several new cases have been reported to health authorities.

In Somerville, the schools were reopened January 6. There have been 187 cases reported within the last four days. It is possible that a temporary contagious hospital will be opened.

### NEW ENGLAND NOTES.

INFLUENZA IN MAINE.—In Bath, Maine, churches, theatres, and all places of public gatherings have been ordered closed indefinitely in order to prevent the spread of influenza. There are 200 cases of influenza and several of pneumonia.

Owing to the spread of influenza in Lewiston, Maine, the opening of schools will be postponed. Bates College will not be reopened until January 14. The actual situation is not known, as complete statistics are not kept by the health board. Thirty-five new cases were reported in Auburn on December 27.

INFLUENZA ON BLOCK ISLAND.—A report from Newport, R. I., states that influenza is spreading on Block Island. There are many cases among the civilian population and two among enlisted men at the naval base. The civil authorities sent an urgent message for nurses to the Newport Chapter of the American Red Cross, and two volunteer nurses were sent immediately to the Island on Christmas night. Three additional nurses were taken to the Island on December 26

In Providence, R. I., an order has been issued by the State Board of Health requiring physicians to make reports to local health authorities of all cases of influenza.

Influenza is prevalent among the crews at the coast guard stations at Narragansett Pier and Fisher's Island.

## Obituary.

### JAMES MARSH JACKSON, M.D.

Dr. James Marsh Jackson, a noted physician of Boston, who, in past summer seasons, had an extensive practice at the North Shore, making his summer home at Beverly Farms, died December 27, 1918, at his Boston residence. He had been in failing health for some time.

James Marsh Jackson was born in Roxbury on April 12, 1864, and was the son of William F. Jackson and Abbie (West) Jackson. He prepared for college at the Roxbury Latin School and was graduated from Harvard College in 1887 and from the Harvard Medical School in 1891. He received from Norwich University, in 1892, a Ph.D. degree.

He served as house officer at the Massachusetts General and Boston Lying-in hospitals, and then spent two years in post-graduate study abroad. Upon his return he practised medicine in Boston during the winter and at Beverly Farms and thereabout in the summer months. He was for 20 years a member of the visiting medical staff of the Massachusetts General Hospital and was extremely active in private practice, devoting himself to his patients with little regard for his own condition, up to 1915, when ill health compelled him to limit his work and, finally, to relinquish it entirely.

Dr. Jackson was a member of numerous medical societies, among them the American Medical Association, the Massachusetts Medical Society and "The Doctors," a medical social club composed almost wholly of his college classmates. He was a member also of the Somerset Club, the Harvard Club, and formerly of the University Club of Boston. On May 15, 1885, he married Leonora Lewis of New York, by whom he is survived, together with his daughter, Elinor.

## Miscellany.

### RETIREMENT OF DR. DUDLEY.

The faculty of the Medical School of the Northwestern University, Evanston, Ill., gave a dinner at the Hotel La Salle, Chicago, on December 12, in honor of Prof. Emilius C. Dudley, who is retiring from the chair of gynecology, after 37 years of work: Many colleagues and friends of Dr. Dudley were there and several speakers, both from the faculty and trustees, bore witness to his great contribution to the development of modern medicine and the affectionate regard in which he was held.

Dr. William E. Quine spoke more especially on Dr. Dudley's relation to medical literature. He told of the latter's coming to Chicago in 1875 and his starting the little medical publication known as the *Chicago Medical Review*. Dr. Dudley's first contribution to medical literature was the invention of the word, "Trachelorraphy," in 1878. The appropriateness of the word won it immediate recognition and it came into universal use. However, his first important contribution was a chapter on the displacement of the uterus in *Pepper's System of Medicine*. The quality of the chapter so impressed the profession that students of medicine clubbed together and had the chapter made into a separate book. Then the publishers saw its merit and Dr. Dudley's career was determined, for he devoted himself to the study of gynecology and produced his book, "The Principles and Practice of Gynecology," 1898, which in its degree of minuteness and accuracy of detail has never been surpassed or equalled by any book on gynecology. Booksellers say that it is one of the most profitable of all texts ever issued in Chicago, running through six editions. Shortly after this, Dr. Dudley wrote a very keen review of Dr. T. Gaillard Thomas' book on "Diseases of Women."

Among Dr. Dudley's more important contributions to medical literature Dr. Quine mentioned the following:

1. "Pressure Forceps *versus* the Ligature and the Suture in Vaginal Hysterectomy." (Trans. American Gyne. Society, Philadelphia, 1888.)
2. "A New Operation for Procidentia Uteri." (*New York Jour. Gyn. and Obstet.*, 1894.)
3. "The Operative Treatment of Cystocele and Procidentia Uteri." (*Jour. A. M. A.*, 1903.)
4. "Ureterocystostomy for Accidental Wound of Ureters in Vaginal Hysterectomy." (*Annals of Surgery*, Philadelphia, 1904.)
5. "The Surgical Treatment of Complete Descent of the Uterus." (*Can. Jour. Med. Surg.* Toronto, 1904; in the *Northwest Medicine*, Seattle, 1904; and in the *Canadian Lancet*, Toronto, 1904-1905.)
6. "Building a New Urethra." (Med. and Surg. Reports, St. Luke's Hospital, Chicago, 1903-1904.)
7. "Sarcoma which had Developed from a Uterine Myoma." (*Ill. Med. Jour.*, Springfield, 1905.)
8. "The Expansion of Gynecology and a Suggestion for the Surgical Treatment of Incontinence of Urine in Women." (Trans. Am. Gyne. Society, Philadelphia, 1905; *Jour. A. M. A.*, Chicago, 1905; *Am. Jour. Obstet.* New York, 1905.)
9. "Technique to Prevent Stitch Hole Suppuration after Closure of Abdominal Incisions." (Med. and Surg. Report, St. Luke's Hospital, Chicago, 1905.)
10. "Technique of the Newer Operations for Shortening the Round Ligaments and the Uterosacral Ligaments for the Correction of Backward Displace-

ments of the Uterus." (*Am. Jour. Med. Sci.*, Philadelphia and New York, 1906.)

11. "A Plastic Operation for Covering the Vulvar Surfaces with Skin after Excision of Extensive Growths of the Vulva." (*Surg., Gyn. and Obstet.*, Chicago, 1906.)

12. "The Utilization of the Broad Ligaments in Complete Descent of the Uterus. Hysterectomy and Removal of the Uterine Appendages." (*Jour. A. M. A.*, Chicago, 1906.)

13. President's Message to the Board of Commissioners of Public Welfare Work of the State of Illinois, January 19, 1918. (*The Institution Quarterly.*, March, 1918.)

In general, Dr. Quine declared, the writings of Dr. Dudley are characterized by compactness and directness. There is no suggestion of inflation, but always a real contribution. Dr. Dudley has written too infrequently, but never without something to say. He has done more to popularize the best ideas and most progressive medical methods in the Mississippi Valley than most other physicians.

In thanking his friends for their expressions of regard, Dr. Dudley, in reminiscent mood, gave a most interesting résumé of his associations with some of the great pioneers in medicine and surgery during the last quarter of the 19th century, which was a period more prolific, perhaps, in scientific output than all previous time. Some of these were: Sir James Simpson, the first man to give chloroform in childbirth and oleshaursen; and in America, Emmet, Thomas, Peaslee, and others, all of whom were disciples of Marion Sims, father of modern gynecology. At present the world is on the eve of revolutionary medical advances, but the work of these men will continue.

Following the example of Plato, Dr. Dudley, in closing, emphasized the value of early association with great men, which to him had meant much. Thanking those present for their good wishes, Dr. Dudley gracefully reciprocated them. For nearly 40 years Dr. Dudley has lived before this community of Chicago and labored in it. He has won the greatest respect of the medical profession, because of himself and because his work has been of such great importance in modern medicine. At this time he retires in the fullness of his powers amid the best wishes of his colleagues and many friends.

## Correspondence.

### NEED OF SERUM FOR TREATMENT OF INFLUENZA-PNEUMONIA.

City of Boston, Health Department,
City Hall Annex, Boston, Jan. 4, 1919.

*Mr. Editor:*—

Blood serum is urgently needed for the treatment of patients suffering from pneumonia incident to influenza. Will you not urge upon those of your convalescent patients who are in a condition to give blood for this purpose the service they can now render by doing so?

Blood serum to be of value must come from patients who have recently, say within a month, suffered from pneumonia as a result of influenza, the presence of the pneumonic complications being evidenced either by the temperature range or by physical findings, or by both.

The preparation of the blood serum requires a high degree of technical skill and can be undertaken only in properly equipped laboratories. Persons who are willing to give blood will be promptly put into communication with laboratories where this can be accomplished.

The administration of serum, too, requires a high degree of technical skill, as it is administered intravenously, not subcutaneously. Its administration must be looked upon, therefore, as a surgical procedure that can be done only by persons skilled in surgical techique, and under conditions necessary for asepsis.

Donors of blood can exercise their option as to whether they will give it free for the use of someone unable to pay for such a sacrifice, or whether they will give it only for the benefit of persons who can and will compensate them for the service rendered.

Names of donors should be sent to the Health Department, accompanied by their addresses and telephone calls, the names of physicians who attended them when they suffered from influenza and pneumonia, and the dates when the patients were pronounced well.

Your coöperation in this matter is earnestly solicited.

Yours very truly,
WILLIAM C. WOODWARD,
*Health Commissioner.*

## SOCIETY NOTICE.

NEW ENGLAND PEDIATRIC SOCIETY.—There will be a meeting of the New England Pediatric Society on Friday, Jan. 24, 1919, in the Amphitheatre of the Children's Hospital, Longwood Avenue, at 4.30 P.M.

Clinical cases will be presented by John Lovett Morse, M.D., Boston; William E. Ladd, M.D., Boston; and Robert W. Lovett, M.D., Boston.

WILLIAM E. LADD, M.D., *President*,
RICHARD M. SMITH, M.D., *Secretary.*

## RECENT DEATHS.

THOMAS TOUNGE PERKINS, M.D., of Cliftondale, died of heart disease while making a professional call, December 6, 1918. He was a graduate of Boston University School of Medicine in 1898, and of Harvard Medical School in 1901, and was school physician of Cliftondale. He was a Fellow of the Massachusetts Medical Society. His age was 44.

DR. IRA C. GUPTILL died recently at the age of seventy-four at his home in Northboro. Dr. Guptill was born in Limerick, Maine. He was a graduate of Bowdoin College and of the Dartmouth Medical School. He had been a resident of Northboro for thirty-eight years.

DR. THOMAS J. COURTNEY, a lieutenant in the Naval Medical Corps and attached to the *U. S. S. Oklahoma*, died on December 27, at the base hospital, Norfolk, Va. He was taken ill in European waters and treated at the General Hospital, Queenstown, Ireland. He recovered sufficiently to return on his ship, but upon arrival at Norfolk was transferred to the base hospital.

Dr. Courtney was born in Worcester and was graduated from Tufts Medical School. For some time he was a member of the medical staff of St. Mary's Hospital, Brooklyn, and later practised in Waltham. He was a Fellow of the Massachusetts Medical Society.